

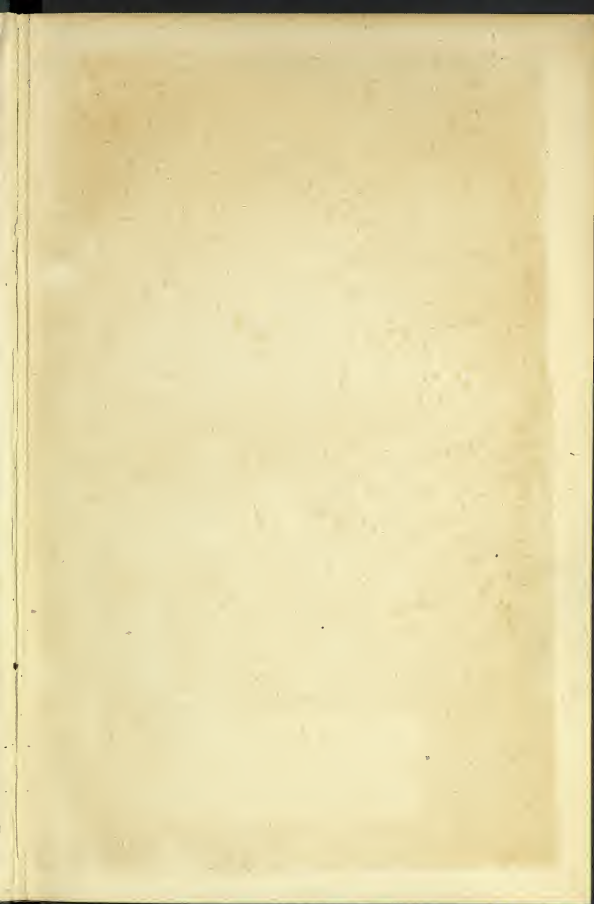
59-581824

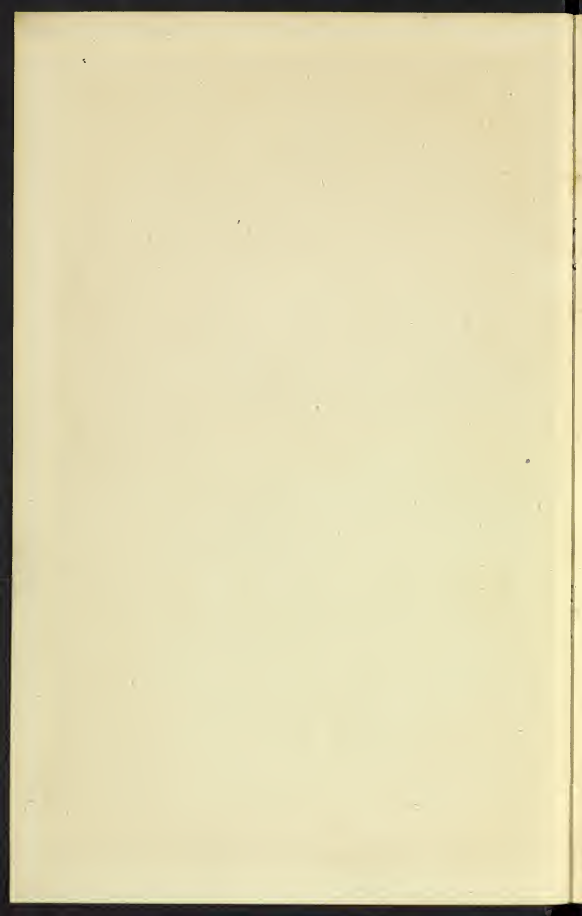
SF 239

P.A.L. 58182

PERKINS
AGRICULTURAL LIBRARY

UNIVERSITY COLLEGE
SOUTHAMPTON









FRANCIS GUENON.

HOW TO SELECT COWS;

OR

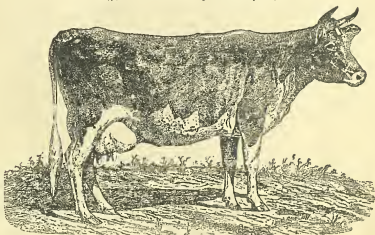
THE GUENON SYSTEM

Simplified, Explained and Practically Applied.

BY

WILLIS P. HAZARD, M. A.,

Secretary of the Pennsylvania Guenon Commission; President of the Chad's Ford Farmers' Club; a Vice-President of the Pennsylvania Dairymen's Association, &c.; Author of Treatises "On the Jersey, Guernsey and Alderney Cow," and "On Butter and Butter-making;" "The Annals of Philadelphia," &c.



WITH THE

Report of the Pennsylvania Guenon Commission

THIRTIETH THOUSAND.

WITH NEARLY 100 ILLUSTRATIONS

Photographed from Guenon's Engravings.

WEST CHESTER, PA.:

WILLIS P. HAZARD.

LONDON, ENGLAND:

TRÜBNER & CO., 57 AND 59 LUDGATE HILL.

1889.

Copyrighted, according to act of Congress, 1879.

THIRTIETH THOUSAND REVISED.

WEYER'S PRINTING AND PUBLISHING HOUSE,
HARRISBURG, PA.

PREFACE.

THE want has long been felt for a hand-book which would simplify and explain the invaluable discovery of Guenon, to enable any one to select good stock. There can be no doubt if this discovery is made to be easily acquired, that millions of dollars would be saved to the community by the improvement of herds and a consequent reduction in the price of bovine products, on account of the increased yield and the lower cost of raising it.

The State of Pennsylvania, in 1878, appointed a commission to test the system and report upon it. As a member of that commission, we found there was with many a superficial knowledge of the subject, with others enough acquaintance with the system to destroy their faith in it, and with nearly all a desire to obtain sufficient practical knowledge of the system to enable them to judge understandingly and to practice it.

With a view to fill these wants, we have undertaken the explanation of the system in the following pages to enable all to fill up their measure of knowledge of the system, so that the superficial shall become thorough, the doubting acquire new faith, and all see its merits *the more they practice and apply it*.

We have accordingly given a sketch of M. Guenon and the progress of his discovery; the preface to his last edition explaining his views; an explanation of his system of escutcheon marks; a description of the various escutcheons and

their indications of value and quantity, and directions how to practically apply them, together with an abstract of the report of the Pennsylvania Guenon Commission.

Believing that we have thus presented a comprehensive view of this discovery, we trust every one into whose hands this work may come, will patiently, book in hand, go into the farm-yard and judge the value of his stock by the rules here set forth, compare the results with his individual knowledge of his stock, and fairly estimate the value of the system.

The illustrations of the escutcheons are photographed from Guenon's drawings in his last revised edition.

WILLIS P. HAZARD.

MAPLE KNOLL, WEST CHESTER, PA., *September, 1879.*

As the demand continues each year, for edition after edition of this work, we have thoroughly revised, and in part re-arranged this edition to make it more worthy of the success it has attained.—*August, 1889.*

GUENON'S INTRODUCTION

TO HIS NEW REVISED EDITION.

ERROR is propagated with the rapidity of lightning; before it every obstacle disappears, and popular favor seems to welcome it. Truth, on the contrary, is received with indifference, often even with doubt, suspicion and distrust. Indeed, how often have we not seen the author of a discovery which, having been accepted and realized ought to have advanced the public good and increased the general welfare, come into contact with the hatred, the ignorance, and the envy, and thus become the laughing stock of fools and the jest of the wise. To some the inventor seemed without good sense; to others an ignoramus. Too feeble to struggle against all he dies broken hearted, and leaves to his powerful antagonist the glory of having, perhaps for ages, buried his discovery, and to those who bring to perfection cities and fields the deprivation of a good up to that time unknown.

If more happy than those martyrs for a new idea, I should reach, at last, that which concerns me, after twelve years of incessant struggles, to cause the truth to appear to the eyes of all, I should have nothing more to desire. Nothing would remain for me, except to bless the generous hearts which shall have aided me in triumphing over routine and error; then on quitting this world, only to bequeath to the worthy men who have so bravely encouraged and seconded my efforts, the task of simplifying my discovery, and rendering my method popular, to cause the analytical knowledge of cattle to penetrate even into the most obscure hamlet, and while dividing thus with me the glory of having done this good, their names will be held in grateful remembrance by future generations; such has been the idea which has guided every moment of my life, all the efforts of my mind.

For nearly twelve years, since I have given my method to the public through a first edition of my "Treatise on Milch Cows," the scientific men and the practitioners have been greatly prepossessed with it. When they have seen me make a successful application before them of my system, by a single inspection of animals which I saw for the first time, they have expressed a lively surprise. Though there is nothing science cannot explain.

Anatomists may explain the nature of secreting milk and those organs. What the breeder wants is to judge animals by very apparent external signs.

In the vegetable kingdom, skillful nurserymen have distinguished more than eighty different orders of pears of summer, of autumn and of winter; each of these orders has its distinctive characteristics, as many for the shape and the taste of the fruit, as for the time of ripening. And when a tree-grower or an amateur is sufficiently skillful, he distinguishes marvelously all these species one from another by a single inspection, and at whatever time of year it may be. He knows equally well what exposure it is necessary to give to each of them to obtain exquisite fruits. So are there signs for judging the bovine race.

My first studies had been directed toward arboriculture. I have practiced with my father during many years. My principal occupation was the cutting of trees, grafts, both splits and bandages, and by studying vegetables, I had acquired the idea of and an insight into classifications.

I was better prepared thus for my work of classifying the bovine race, a work which no one had ever tried, either theoretically or practically.

My classification of the characteristic signs, embraces all the breeds of France and other countries, without distinction of sex or age.

Unknown, up to this day, although they have always existed, these signs have escaped all the world, even the sagacity of the most celebrated painters, as well as that of veterinary doctors of the highest reputations.

The appearance of my method should mark an era, for it opposes and overturns all the prejudiced routines according to which people have practiced up to this time. It opens a new

era in an art in its infancy, in a science whose first principles even were unknown. I should then expound it with the greatest detail. This new edition contains everything to instruct cattle owners; the milk-product is the special object of my attention.

This method is of the greatest simplicity, whatever has been possible to be said of it, and whoever will become thoroughly familiar with the escutcheon of the first order of each class, will be able to judge of all.

Escutcheons are ten in number. They extend, according to their class, from the centre of the four teats to the level of the upper extremity of the vulva, and may extend in breadth from the middle of the hinder surface of one leg, to the middle of the hinder surface of the other. By their form or configuration, escutcheons characterize and distinguish the ten families which together constitute my classification. Behold, then, to what is reduced, in reality, this pretended immense complication.

A special figure, placed at the end of each class, serves to indicate bastard animals.

Each of the *classes* or families is characterized by an escutcheon of fixed form, always similar to itself, in that class or that family, but variable in the dimensions of its surface. That dimension or that surface should be estimated by square centimeters, but that would be too complicated for practical use; since it depends on the size of the individual, it is estimated by the limits of the escutcheon placed on the hinder part of the animal. The extreme limits are the hams, the interior surface of the legs, and the vulva. The surface of the escutcheon, of which the extent varies, has permitted me to divide each class or family into *six orders*, to each one of which I assign, taking in account the size of the animal, the quantity, the duration, and the quality of the milk.

The escutcheon of the first order is the most developed; is also the best marked. The escutcheon of each of the five other orders is similar in form to that of the first order. It is, in some sort, only a proportionate reduction—a diminutive. It is the escutcheon of the first order, with the dimensions reduced or brought within less extended limits, reaching no longer the hock nor longer covering the interior of the thighs,

nor yet reaching up to the vulva, remaining consequently at a distance greater or less from these boundaries.

I have added to this new edition—

1st. Two new classes, sub-divided also into six orders, (the Left Flanders and the Double Selvage.)

2d. Two varieties of escutcheons, having some similarity with the others.

3d. The classification of bulls used for propagation.

These three additions, unpublished until now, complete and generalize the system of characteristic signs, by which one can prove the absolute and relative superiority or inferiority of each individual of the race.

These new forms of escutcheons were known to me at the time of the publication of my first issue, and which I had already announced; but they occurred so rarely in the breeds which were familiar to me, that I thought they were not worthy of mention.

But, now, since I have traveled so much, not only in France, but in foreign countries, I have convinced myself that these classes occur much more commonly in certain breeds than I had thought at first. I have felt the necessity of putting them in my method, and have given them their proper place.

In respect to the two new varieties of escutcheons, they are like an appendix to the classification, and characterize the product of crossing between different classes.

To state precisely their signification and to value their corresponding milk product, it is necessary to compare these escutcheons with the order of the class to which they are the most analogous.

When I have described the different families of "free" cows, as well as their division into orders, the yield or the quantity of milk, their butyraceous qualities, and the greater or less period of its duration of yield during gestation, I will pass to the bastard cows, which, though perfectly similar in form and color to others, differ essentially from them, for they lose their milk as soon as they are pregnant. This close resemblance is a source of error to the most practiced judges. Thus have I wished in the description of classification, to point out precisely the distinctive signs by the aid of which one can easily recognize them.

After the study of bastard cows, comes the chapter of bull re-producers. In the classifications of bulls, I have reduced to three the numbers of orders of each class, in order to bring the application of the method to the most simple expression. The first will comprehend all the bulls, the good re-producers; the second, the re-producers of middling quality; the third, the bad re-producers. I mean by bad, those in which fails the ability for the transmission of the lactiferous qualities. The characteristic signs with the males, as with the females, have a significant value of the highest importance. With the bull, they portray the re-productive qualities, and with the cows the lactiferous qualities. The observers who will apply my system as rigorously for the males as for the females, will observe in the passage from one order to the other, the same scale of proportion that this established in the classification of the cows. Although the classification bears more on the lactiferous or re-productive properties than on the others, it is important to take in consideration all the other qualities that the individuals can and ought to possess to be of an irreproachable organization.

The cows of the first and second order of each class, in all breeds, will always give in the same country, a greater abundance of milk than those of inferior orders. To recognize the lactiferous product of cows, whatever may be their class or the locality that they inhabit, it is a help to know the quality of the food which makes the habitual nourishment of the cows in the place where they are kept. When judging the degree of superiority or of inferiority by the escutcheon, one will judge close upon the daily quantity of milk that the cows of the same country are apt to give, for one will know then in what proportion all the figures of the classification should be modified.

A milk cow ought to be neither too fat nor too lean, to give her maximum of milk. All confinements in a period of thinness are prejudicial to the habitual produce. Even when the animal would have recovered her strength, she will not recuperate so as to restore the quantity of her milk; that can take place only after a year, and by means of a new calf. A great milk cow, whatever may be her aptness for fattening, and her condition of fat at the time of calving, becomes thin about fifteen or twenty days after calving; the times of her rut are further apart than that of a poor milk cow, because her

vital forces are weakened by the quantity of her yield, which is not the case of the cow of medium product.

We can compare a milch cow to a fruit tree, which gives more fruit this year than the next. When the sap of the tree carries vigor to the development of the fruit, the growth of the wood remains nearly stationary. When, on the contrary, the tree gives but little fruit, the sap increases the wood, to give, after a repose of several years, a greater quantity of fruit, and to continue thus by alternative succession. It is the same with the cow, for it is seldom that her produce keeps the same during three consecutive years, for the reason that, when the nourishment absorbed by her turns to the profit of the milk, the milk is more abundant; when, on the contrary, the nourishment goes to fat, the milk diminishes. The variations in the milk quantity may be justly attributed to the influence of atmospheric circumstances of the seasons, which react on the quality of hay and fodder in augmenting or diminishing the nutritive juices of the food.

Cows which are fed in good pastures surpass the product which I have assigned to their class and their order, while those which are in poor and wet pastures will yield less, unless the latter have in the stable nourishing food, more abundant and more succulent than they are able to get for themselves out of doors. If, for example, the well-fed cows, or those grazing on rich pasture lands, should give as much as twenty to twenty-five quarts of milk per day; these same cows, taken and fed on poor pasture, will give only about ten or twelve quarts. If, on the contrary, one takes the cows raised on a poor soil, transfers them to rich pastures, the milk produce of these same cows will be superior to that they gave in their original lands.

My readers should well understand that in the valuations of my classifications that I have not pretended to assign a rigorous and absolute amount. I have been only able to give an approximate figure to each class and to each order, adopting the average amount of the different breeds of various localities. The atmosphere, the care, and the different foods of each country, all these different things exercise upon the animal, an influence favorable or unfavorable, according to the nature of the soil.

There are many other circumstances which should be con-

sidered, and which would disturb the harmony of the figures of my valuation and the normal quantity. Such are, for example, the case of sickness, accidents, &c. That is the reason I have adopted, in determining the quantity of cows of each order, a medium figure, such as is shown in the classification.

I will also observe, relative to those animals to which I assign approximate weight in the course of this work, that, following the customs of commerce, of sale and of butchers, this weight is dead weight, the carcass being deprived of the hide, intestines, head, feet, &c. If, contrary to custom, I had made the calculation for the animal on the hoof, the figures given by me would present a great difference, which would increase according to the amount of fat, sometimes to double the weight.

The discovery which I have made of the value of the escutcheon is designated by the contrary direction of the hair, and which had escaped the attention of every one, even those most interested in gaining the knowledge of it. It is necessary also to avow the effect produced by the change of direction of the hair is not glaring on the animal. It is merely a difference of luster or gloss between the surface of the escutcheon and the part of the skin surrounding it. The hair of the escutcheon is finer, shorter, more furry, and more silky. Its appearance, at the first glance, makes one think this part of the animal has been shaved. Compared with the ordinary hair, the skin of the udder appears designed to be quicker seen on the part where appears the escutcheon.

All animals of the bovine species, not excepting wild animals, are marked with an escutcheon, large, small, or medium, regular or irregular. Their characteristic sign is transmitted to their offspring.

I have not thought it necessary to say much on that portion of the escutcheon which extends on the stomach of the beast towards the navel. Enough is shown of the escutcheon when she is standing.

In order to see well the escutcheons with all the fullness which my sketches give them, it must be supposed that the udder of each cow is seen distended with milk, such as would separate the hind legs to the greatest extent. In this way the escutcheon is seen as if the skin was stretched flat, or as if the envelope of the milk-bearing apparatus formed a plain surface,

on which is drawn all that is not visible to the eye, without the aid of hands or of movement of the cow, which is hidden in the folds of the udder and of the thighs of the animal on foot.

In order to examine and to distinguish perfectly the escutcheon, one should place himself behind the animal and make it advance some steps, in such manner that the movements which it makes in walking should show, one after another, the parts which one needs to see. One can also pass the nails over the space occupied by the escutcheon and the hand downward from above, contrary to the rising hair, and ruffling it, recognize without difficulty its form and its extent.

My method may at first appear difficult and complicated, which, indeed, pretended savants have chosen to affirm. But it is not so; to know, it is necessary to study and to practice.

The beautiful art which I am about to explain is easily acquired. Its technical dictionary is composed only of three words, of which the reader should, first of all, know perfectly the precise signification. These words are *Escutcheons*, *Epis or Tufts ascending*, and *Epis or Tufts descending*. After he knows perfectly the different forms, and the importance of these characteristic signs, he will know the whole subject as well as I do myself.

The Epis or Tuft, participates with the escutcheon in the distinction of the orders—it multiplies the sub-divisions. It seems to complicate my method and to render it less accessible; but I have not omitted it, since it has an important value.

If, on certain animals, the form and extent of characteristic signs are not exactly those of the drawings, but a sort of intermediate between the characteristic signs of two classes, the student should approximate them to the drawing of the classification from which they differ the least, and from that deduce the probable value.

And now, whoever my opponents may be, I proclaim boldly that the escutcheon is the only incontestable characteristic sign that can enable one to discern, by simple inspection, the aptitude for milk production of each animal. All animals of the bovine species in good state of health, to which no accident has happened, and whose escutcheons are of the first orders of each class, will manifest always as much for the production of milk as for generative ability.

Beauty of form, an ideal, (a simple accessory without value of its own,) one ought to take it into consideration, when the question is that of the production of milk.

May I have been able to justify by this work the fruit of the experience of my whole life, the honor done me by many agricultural societies in admitting me to their membership, and by the government which has shared the expense of this new edition, with the two-fold purpose of encouraging my efforts and facilitating the dissemination of my method.

GUENON'S METHOD OF JUDGING OF THE VALUE OF STOCK.

FIFTY years ago there was dawning upon the world the first ray of a great discovery. A star was rising in the agricultural world, which was about to shed new light, and like many other valuable discoveries, it was made by one among the lowly, and partly by chance. The author of this new discovery has said, "Error flies with the rapidity of lightning, all obstacles vanish before it. Truth, on the contrary, is admitted coldly, often even with doubt, suspicion, and distrust." It is owing partly to this, partly to the fact that this new light was given to the world when the mind of farmers were not ready to *receive* new ideas of progress as they now *seek* them, and much to the fact that it was the invention of a foreigner described in a foreign tongue. True a translation of it was made through the medium of an American monthly magazine of agriculture; but it was one of limited circulation. At that time the number of periodicals devoted to that interest was few, and such new and important questions were not thoroughly discussed and the knowledge of them placed in every farm-house in the land, as it is at the present day. Shortly after the appearance of M. Guenon's treatise in the magazine, it was reprinted in book form, and received the large circulation of sixty-five thousand copies, between that time and now. By many who procured that book the subject was studied, and advantage taken of its revelation, being stored away in the reader's mind for actual practice. By the great majority it was read, but not studied; driven from it by the apparent complications of the system and the two hundred sub-divisions of it; by many, perhaps, it was attempted to be put into practice, but without their having given the subject that close investigation which was needed to prove the system correct. It was mostly by this class of persons, because the system was not found to be infallible, that it was denounced and given up, even by men otherwise intelligent; as if anything human could be infallible. Thus it is that by the ignorant its revelations were received with in-

credulity, and by many of the intelligent with doubt; but to the earnest seekers after practical information, it has unfolded a mine of wealth, and they have proved the system by continuous experience, and found it to be the most reliable mode of judging of the value of every member of the bovine species.

It was a happy thought that suggested itself to the Pennsylvania State Board of Agriculture, to have the system tested by uninterested parties. But extremely difficult, it was, to obtain persons to make the test. For those to whom application was made declined it on various grounds, principally because, as Guenon himself has stated in his latest edition, many pretended scientists would endeavor to throw ridicule upon it; many others would identify the gentlemen making the tests with it, as if it was their system that they were testing; while not a few still more narrow-minded, would think they were trying to humbug them. Thus it was difficult to fill the places, which offered neither honor nor profit.

It will be seen, by these extracts, that the Governor appointed three experts to test the system. This they did in the summer of 1878, examining two hundred cows, jotting down their opinion of the yield, quality and time of each of them, and afterwards printing them alongside of the reports of their owners, so that the public could form their own estimate of the results of the examinations of the commission. Particular attention is called to the examinations of the *blanketed cows* in Thomas Gawthrop's herd.

On M. Guenon and his System.

It is proper we should inquire into M. Guenon, and the origin and development of his system.

Monsieur Francois Guenon, a husbandman of Libourne, in France, was the son of a gardener, and followed for sometime his ancestor's trade. He seems to have had a mind above those in his position. As we look at his portrait, he appears to have a clear eye, a cool head, great determination, firmness of character, a well-balanced mind, and with it all, a vigor of constitution which buoys him up, and enables him to override obstacles. He says himself, he was of an observant turn of mind, fond of comparing things, and deducing consequences from what he learned by observation and comparison, parti-

cularly from the Book of Nature. Young, ardent and healthy, with the vivacity of his race, he felt himself destined for better things than those a gardener's life would insure him. What wonder then that his eye was keen to see, his mind to grasp and analyze any new turn of thought that chance might throw in his way.

Like most self-made men, who have made their mark in life's pilgrimage, he set to work to improve himself—to acquire that which would expand his mind, and fit it to receive any new inspiration, and be able to develop it. He studied the works of the best writers on botany and agriculture; and applied his knowledge by following up all the ramifications of the vegetable kingdom, and studied their external signs, that distinguish the different sorts, and ascertained their qualities and productiveness.

In France, they have few fences, and the cattle of a neighborhood are driven to the grazing ground and herded together, and, in turn, members of each or several families (the younger portion), are put to watch that the cattle do not stray out of bounds. Such companionship with their stock makes the owners fond of them, and they are treated as pets, and become very docile.

Quirls and Dandruff.

In his authorized account of the discovery and perfection of his system, Guenon uses the following language: "When fourteen years of age, I used, according to country custom, to drive our only cow to the grazing ground. I was very fond of her, and could have identified her among ever so many. One day as I was whiling away the time in cleaning and scratching my old companion, I noticed that a sort of bran or dandruff detached itself in considerable quantities from certain spots on her hind parts, formed by the meeting of the hair as it grew in opposite directions, which spots I have since called *ears*, from the resemblance they often bear to the bearded ears or heads of wheat or rye. This first attracted my attention, and I recollected having heard my grandfather say that it was probable that there were external marks on cows whereby their good qualities or their defects might be known—just as we judge of the vital force of a plant and its qualities by means of its leaves and lines in its skin. Reflecting on the subject, I arrived at

the conclusion that if in the vegetable kingdom there exist external signs, whereby the good and the bad qualities of a plant can be positively known, there ought to exist in the animal, or its kingdom, also, marks whereby we may judge, by inspecting an animal, of its qualities, good and bad, and I thought I had discovered one of these signs. I sought the bearded ears or quirls, and scratched those spots in quest of dandruff, the abundance or scarcity of this being what first engaged my attention. Every new cow was compared with my own as a standard, and her superiority, equality, or inferiority determined in my own mind. In the course of the comparisons thus instituted by me, with reference to the dandruff alone, which was at first the only thing that governed me, I had occasion to remark that great diversities existed among cows in respect to the shape of the bearded ears (quirles) which produced the dandruff. This suggested a new train of reflection and observation, which resulted in my becoming convinced that these *shapes* were the signs by which to distinguish cows, and to know the good and bad qualities of every individual among them."

The Progress of His System.

With his mind keenly alive to the pursuit of his investigations, he soon perceived the difference in the shape of these quirls or marks in the hair. We can imagine how, when he saw any cow with the same escutcheon as his own had, he would eagerly and closely question the owner, and then make his comparisons and deductions. Then, again, when he would see variations from his cow's escutcheon, whether larger or smaller, though of similar shape, how he would study them over! When he would ask of the owner such questions, directed by his knowledge of the cow's marks, the owner would stare, and think how the lad could know so well of *his* cow. And then his secret exultation when the answers showed him that he had judged aright! We can imagine this young enthusiast going on, from step to step, filling up his leisure with his acquisitions of his new theory, which was becoming fact, and growing into a system.

From his first step of discovering the dandruff, its scarcity or abundance, to his noticing the great diversity existing among cows as to the shape of the bearded ears or quirls, and being

convinced these shapes were the signs by which to distinguish cows, and then to make sure that the same mark might always be relied upon as a positive sign of the same perfection or defect, were all steps in the discovery that engrossed his whole mind. He gave up his trade, traveled about, visiting cattle markets, fairs and stables. Conversing and cross-questioning all whom he could; fixing the results in his mind, and getting the classification shaped out. He talked with farmers, dealers and veterinary men, ascertained their modes of judging of the points of an animal, and found they were all by their own favorite signs and marks. One looked to the udder, the horns, the hide, or the shape; others to the hair, the veins, or something else; but none judged by the signs which he had found out. All were uncertain. The most the best judges could do would be to guess rightly, perhaps, three times out of five, but none could tell how long a cow would milk. Perfecting his judgment he would visit the same places and the same cows several times in a year, to see how nature was operating upon the animals, and their changes of character in the different periods of gestation, their treatment and food.

Of course, he soon began to put his theories to practical value, and he dealt in cattle on his own account. This brought before him cattle from Holland, Switzerland, Brittany and other countries. This improved his opportunities by proving to him that, no matter what country gave them birth, all individuals possessing the same marks belonged to the same class and the same orders; in short, that nature acted through uniform laws.

In 1822, Guenon seems to have first reduced his system to a classified basis, and from that time until 1828 he appears to have given it much of his time and attention. Having, as he deemed, sufficiently arranged and tested his system, he, in 1828, applied to the Academy of Bordeaux for a public test of the correctness of his mode of judging of cows and their milking value.

The following, from the proceedings of the Academy, shows that Guenon did not make his system common property. The minutes of the Academy, under date of June 3, 1828, contains the following record: "Mr. Francis Guenon, of Libourne, possessor of a method which he deems infallible for judging, by mere visual examination, of the goodness of milch cows, and the quantity of milk which each can yield, has solicited the

Academy to cause the efficaciousness of this method to be tested by repeated experiments. The case presented by this request was one of a secret method of judging, which the possessor was not willing to reveal. On the other hand, it seemed difficult to admit that the external sign, whatever it might be, by which Mr. Guenon judges, could always bear a proportional relation to the quantity of milk yielded by a cow. Nevertheless, the Academy deemed it proper to appoint a committee charged with making the examination. Trials have been made with care, and under precautions necessary for precluding all collusion. The cows used for the purpose belonged to three different herds, and amounted to thirty in number, and the result has been to establish, to the satisfaction of the committee, that Mr. Guenon really possesses great sagacity in this line. So long, however, as his method shall be kept secret, it cannot be judged of, nor rewarded by, the Academy. Governed by these considerations, the Academy, having ascertained from Mr. Guenon that he is willing to submit to every test that may be proposed, and to disclose his secret, upon receiving a just indemnity, has referred him to the prefect, and has engaged to recommend him to the favorable notice of that magistrate, who is ever disposed to promote all that tends to improve it."

From 1822 to 1837, it would seem that Guenon perfected and studied his system, but it does not seem to have come promptly before the public, until the agricultural society of Bordeaux took upon itself a careful investigation of the whole system. From the detailed report of this committee, appointed by this society, to test the knowledge of Guenon, in 1837, we take the following as illustrating, not only the results reached by them, but also the manner of conducting the examination :

"Every cow subjected to examination was separated from the rest. What Mr. Guenon had to say in regard to her was taken down in writing by one of the committee ; and immediately after, the proprietor, who had kept at a distance, was interrogated, and such questions put to him as would tend to confirm or disprove the judgment pronounced by Mr. Guenon. In this way we have examined, in a most careful manner—note being taken of every fact and every observation made by any one present—upward of sixty cows and heifers, and we are bound to declare that every statement made by Mr. Guenon, with respect to each of them, whether it regarded the quantity of milk, or, the time during which the cow continued to give milk after being got with calf, or finally, the quality of the milk as being more or less creamy or serous, were confirmed, and its accuracy established. The only discrepancies which occurred, were some slight differences in regard to the *quantity* of milk, but these we afterward fully satisfied ourselves were caused entirely by the food of the animal being more or less abundant.

"The result of this first test seems conclusive, but they acquire new force

from those of a second trial in which the method was subjected to another test through Mr. Guenon and his brother. Your committee, availing themselves of the presence of the latter, caused the same cows to be examined by the two brothers, but separately, so that after a cow had been inspected, and her qualities as indicated by the signs in question had been pronounced upon by one of the brothers, he was made to withdraw; then the other brother, who had been kept aloof, was called up, and desired to state the qualities of the same animal. This mode of proceeding could not fail to give rise to difference, to contradiction even, between the judgments of the two brothers, unless their method was a positive and sure one. Well, gentlemen, we must say it, this last test was absolutely decisive. Not only did the judgment of the two brothers accord perfectly together, but they were in perfect accordance also with all that was said by the proprietors in regard to the qualities, good or bad, of every animal subject to this examination."

The Bordeaux committee added: "To the proprietors and to the lookers-on, all this was very surprising for the examinations were as quickly made as the results were certain. As to ourselves to whom the method was no longer a secret, it was with renewed interest and astonishment that we viewed the accuracy of the results. *This system we do not fear to say is infallible.* We only regretted the whole society was not present."

The committee further reported that Mr. Guenon had, after more than twenty years observations and researches, discovered certain natural and positive signs that were proof against all error, while the writers and professors who have particularly occupied themselves with the bovine race, can only indicate some vague signs for judging of the fitness of cows for secreting milk. That this method is valuable, whether it tells the yield of milk only, or indicates the improvement of breeds, which are liable to deterioration from mismanagement in crossing, and that it is applicable not to full-grown animals alone, but also to calves at as early an age as three months. Thus it affords a sure means of forming a judgment of full-grown animals, about which we might be misled on account of their form and their parentage, and secures the improvement of herds by enabling us to dispose of those calves which will not repay the cost of rearing them. We shall thus no longer rear calves at great expense for two or three years that should have been consigned to the butcher, nor sell calves that would pay best to rear. If this system is pursued, only cows and bulls of best quality will be kept, and in very few years how great will be the improvement of our herds, and largely increased the cheapest and best of all foods, milk, and the production of butter and cheese.

The committee of the Agricultural Society of Bordeaux,

therefore, decreed Mr. Guenon a gold medal, made him a member of the society, ordered fifty copies of his work, and distributed one thousand copies of their full report among all the agricultural societies of France.

On the 26th of May, 1837, a similar test was made by the agricultural society of Aurillac, whose committee, in their report, use the following language :

"Each cow was examined separately by M. Guenon, who wrote his notes upon her, and delivered the paper closed to one of us. Immediately after, another member of the committee questioned the owner of the cow, or the person in charge of her, in regard to her daily yield of milk, its quality, and the time during which she continued to give milk after being got with calf. The answers were taken down in writing, and then compared with the notes written by M. Guenon. They were generally found to accord, and proved to the satisfaction of your committee and every one present, all of whom attended with lively interest to these proceedings, that M. Guenon possesses great sagacity in judging of cattle, and that his methods rest upon a sure foundation."

The society reported that Mr. Guenon examined the herd of their president, of one hundred cows, from which were selected designedly, the best, the moderately good, and the most indifferent of the establishment. Upon each, Mr. Guenon pronounced with precision, and his decisions corresponded almost invariably with the statements of the persons in charge. The only variations were very slight ones, in regard to the quantity given. But this herd was fed unusually high, and Guenon was totally unaccustomed to the usages of the country in feeding cattle, and this caused him to pronounce the yield a little less than it really was. A proof of his system, for he declares the yield will vary according to the feed and management, which all observant farmers know to be the case. Mr. Guenon examined some of the cows a second time, and also the calves, and those calves he assigned to the first orders the cowherds said were from their best cows, that gave a great deal of milk.

The notes of his reëxaminations corresponded exactly with his first statements. The committee therefore awarded Mr. Guenon a gold medal, made him a corresponding member, subscribed for twenty-five copies of his book for each of the sub-societies, and distributed their report through all the agricultural channels of France.

With these testimonials, the highest that could be procured in France, Mr. Guenon went on with the publication of his book, which had a wide circulation in every department of France. And he was finally granted a pension for life of three

thousand francs a year by the French government, after the National Assembly's committee on agriculture had given the system a thorough test. In the presence of fifty of the most eminent agriculturists, M. Guenon made his examinations, and judged correctly of all but one of the quantity, of all but one of the time, and of all of the quality; and the committee reported the results were altogether conclusive, and that his discovery had reached to the dignity of a science. They also declared the daily production of milk in France might be increased by several millions of pints daily, and that the abundance and quality of milk in the dams must contribute largely to the improvement of the progeny. They voted him the pension, and invited him to deliver lectures in the different veterinary, agricultural and normal schools of the kingdom, and before the different agricultural societies, as "the speediest and best means of spreading the knowledge of this discovery," and "to repair the time lost in ridicule, doubt, or indifference—the inevitable preface to all undertakings beneficial to humanity."

In the foregoing account of Mr. Francis Guenon, it will be seen that, by his indomitable perseverance in perfecting his system or method, he raised himself from the ranks of a poor gardener's boy to the position of a great benefactor, and was presented with various medals and decorations, and a large sum of money voted to him. Surely, such a brilliant position must have been won entirely by merit, for he had neither means nor influence to advance him into notice.

In 1882 we wrote to the minister of agriculture of France to make some inquiries, and he politely replied, that "he thought the system owed its origin to the studies and experiences of both brothers, Joseph and Francis Guenon, who followed the profession of husbandmen and dealers in cows in the department of the Gironde; that Francis, being better educated than his brother was charged with the duty of making it widely known; that the Guenon system is now actually taught in France in the agricultural and in the veterinary schools, as also by most of the agricultural associations. At what precise date the two brothers died is not known by the Bureau of Agriculture, who are apprised only that Francis died about the year 1855, and Joseph one or two years before him."

The Escutcheons and Their Classification.

In his original plan, Guenon divided the different shapes into eight classes, each of which was sub-divided into eight orders. As he progressed in his investigations, he afterwards added two more classes, and reduced the orders to six in each class. These he supposed would cover all cases which might come up for examination. He also divided cows into three grades, which, in accordance with their *size*, he styled high, low and medium. From this it will be noted that Guenon, in classifying cows, was governed first by the *class*, second by the *order* in the class, and finally by their *size*. These *classes* he divided and named as follows :

1st class, or Flanders.	6th class, or Double Selvage.
2d " " Left Flanders.	7th " " Demijohn.
3d " " Selvage.	8th " " Square Escutcheon.
4th " " Curveline.	9th " " Limousine.
5th " " Bicorn.	10th " " Horizontal.

The ten orders in each of these classes were simply designated by their appropriate numerals. Each *class* was better than the succeeding one, and each *order* better than the following one of the *same* class, but might be better than the preceding order of the *next* class.

Of this seeming multiplicity of classes, orders and sizes, Chalkley Harvey, one of the commission appointed to test the system, writes thus :

" Now this may seem somewhat discouraging to your readers, but with all due respect to Guenon, to whom all honor and praise should be accorded for his brilliant discovery, I think that it may be so simplified that every farmer, dairyman and dealer can learn it all in a short time, and may find the study quite interesting. I began it laboriously, supposing that a mastery of all the details was necessary to make it of any use, but more than twenty years of constant application in practice has simplified it to my mind, and has added a little, I think, to the original discovery. The substance of Guenon's discovery is that the milking qualities of any cow, of any breed, are indicated by an outward sign that all may see and easily understand. The hair on a cow, as on other animals, grows downward on the hind-quarters, but there is an exception to this rule on the back part of the udder, where it usually grows upward. The first lesson for a beginner is to notice this fact. Let

him stand behind a quiet cow, and rub the hair on the udder both ways until he sees or feels just what I mean. Guenon called the surface that is covered by this upward growth the escutcheon; others have called it the milk-mirror; but this is no improvement in any respect, and I shall name it as Guenon did, for there is no real objection to that name, and there is serious objection to making confusion by calling the same thing by different names. The escutcheon, then, is that surface on the cow's udder where the hair grows upward. But it is not confined to the udder, it extends upward above the udder, often to the vulva, and outward upon the thighs on both sides of the udder. (See Flanders cow, class first, order first). These escutcheons are different in size, in shape and in quality, (quality means the quality of the skin, and of the hair growing on it,) and these differences indicate the different milking qualities of the cows, including quantity and quality of milk, and the length of time they will give milk after being with calf. On the edges of the escutcheon where the upward and the downward growths of hair meet, a feather is formed, and this is most conspicuous on the back part of the thighs where escutcheons extend that wide. If the hair is long, as it generally is in winter time, the observer can define the limits of the escutcheon better by applying his hand, and smoothing the hair to its natural place. He will now perceive that the hair on the escutcheon is shorter and softer than elsewhere, as well as turned upward in its growth, and sometimes nearly resembles fur.

"Let us now particularly consider the shapes and sizes of these escutcheons. There is one general shape to which they conform, and that is that they are wider below than above, and at or near the top of the udder they narrow in abruptly; some continue up as far as the vulva, and even above it, and others but a little distance above the udder. The size and shape of this upper part of the escutcheon is of less importance than that of the lower part, but both must be considered—the larger the escutcheon the better. All great milkers have very large escutcheons. In large ones the upturned growth often begins on the belly, in front of the udder, extends along between the teats and up the back part of the udder, over the whole width. Indeed, the udder is not wide enough for it, and it encroaches

on the thighs, where we may find the hair having an upward growth on them, inside next the udder, beginning not far above the hock joints, and running up as high as the wide part of the escutcheon extends up the thighs, and which often terminates with corresponding curls in the hair at the outlines, and the higher up and wider these are apart the better. Though the extension of the escutcheon to the front part of the udder on the belly has been mentioned, that is not a matter of practical interest in ordinary cases. All that needs to be studied is plain to be seen by standing behind the cow. When the escutcheon is small, it does not reach the thighs, and often does not cover the whole of the back part of the udder. These differences in size can be distinguished at the first lesson taken in the cow-yard, and when that has been done, the next thing is to consider their shapes. A good escutcheon is symmetrical. The feathers on the two thighs are at equal distance from the middle line of the body, and extend up to equal heights on the back parts of the thighs. A broad and high escutcheon, (speaking now only of the lower broad part of it,) that is *alike on both sides*, certainly indicates a superior milker. There is nearly always another sign accompanying such an escutcheon, and that is one or two *ovals* just above the hind teats, on which a *fine* coat of hair grows downward. These may be large or small, may be one or two, and may be alike in size, or unlike, but they are always good signs. Two are better than one, and the larger and more uniform they are the better; they are almost always present on large and symmetrical escutcheons. No escutcheon is ever first class if it has not one or both, and one, at least, of good size. What constitutes 'good size' will be better learned by a few observations than can be taught by inches, and I want to leave somethings to the ingenuity of the learner, to make the study interesting.

"Now, let us consider the shape and size of that part of the escutcheon which I have spoken of as the upper part; that is, the narrow portion that has its base on the top of the lower and wider portions, and runs up toward the vulva. Sometimes, though very rarely, this does not exist at all. Sometimes it is broad, and extends all the way up, with perfect symmetry. Sometimes it terminates in a curved line, at a greater or less distance up; and, indeed, it may be seen of almost any shape.

As a sign of excellence, the larger and more symmetrical it is, the better—but a good *lower* part of the escutcheon is the main thing, and that, as a sign, can hardly be vitiated by any imperfection of the upper part. When the lower part is very good, there is usually uniformity in the part. A poor escutcheon is one that is small, or that is imperfect in form."

Imperfections and Tufts.

Variations would arise, from crossing two animals with different escutcheons, from some defect in marking at the birth, from lack of development, or from those freaks that nature sometimes plays. They always prove stumbling blocks in forming the judgment on some animals, and furnish texts to the opponents of the system.

As Guenon continued his examinations, he found that his classes did not afford a place for all animals, or rather that there were occasionally to be found cows whose escutcheons while apparently belonging to one of these classes, had at the same time, certain distinguishing features which he styled imperfect escutcheons. These may be described as follows:

The perfect escutcheon of each Class is the one which is in Order No. 1. All variations from this are rated lower in the scale of that class; these variations may consist of a smaller size, therefore, the escutcheon would not be so broad or high upon the thighs, nor so broad upon the vertical portion; they may consist of the lack of ovals, which would place them below the first order; they may consist of blemishes, which are tufts of hair growing alongside of the vulva, or below it; or they may consist of strongly marked imperfections, which may be cuts or slices taken out of the escutcheon; or, coarse, harsh, wiry hair on the back and upper part of the udder. Finally, they may be so decided as to place the animal among the bastards.

Sometimes there is an intermingling of two forms of escutcheons. This depends upon the crossing between a cow of one class and a bull of another. This is one of the difficulties to be encountered in precisely estimating the value of the animal.

Of the tufts, Guenon says all tufts encroaching *on the escutcheon* diminish its value, except the oval ones on the udder; that is to say, they indicate a diminished aptitude for yielding milk. The size and location of these tufts make the animals

descend one or more orders in the classification. It is, therefore, important to attend to all the patches of descending hairs which lessen the size of the escutcheon, whether these occur in the middle of it or form indentations on the sides. These indentations, partly concealed by the folds of the skin, are sometimes perceived with difficulty. Many cows, which at first glance appear to be well-marked, on close examination display their deficiencies, and want of this scrutiny often causes mistakes in estimating the value of cows, and thus the system suffers.

Guenon says the cause of the defects, as exhibited by the tufts on the thighs, is that the veins situated beneath, on either side of the belly, have a peculiarity; that they are contracted, and there is a small opening for it where it pierces the abdominal muscles, on the side that has the defect.

Guenon classified the seven tufts, into two kinds: Those on which the hair ascends, and those on which it descends. Those with ascending hairs are simply traces which encroach on the descending hair outside the escutcheon, either on one side or beneath the vulva; of these there are two. Those with the descending hair are on the ascending hair of the escutcheon, and are five in number.

1. *Epi ovale*, oval tufts. These are situated on the udder, like those on class one, two, three, four, order first. They are good signs, if of descending fine hair, small and regular; these are mostly seen on only the best cows, though occasionally to be met with in some of the lower orders.*

2. *Epi fessard*, buttock tuft. These are found on the vertical escutcheon on one or both sides of the vulva, as in class four, five, orders two, three, four; and very conspicuously in the bastards of class three, four, five, six. † They are of ascending hair, and never seen on first-class cows, but in most others to a limited extent.†

* The hair upon these udder ovals is usually of a lighter color or white. If the ovals are large and irregular, with much coarse hair upon them, then they are a mark of inferior quality; in such case they are apt not to be oval in the upper half, but pointed. The ovals do not determine the quantity of milk, but rather the persistence of it.

† They are usually two to three inches in length by one-half inch in breadth. When of this size, and covered with fine and silky hair, they indicate persistent milking during gestation. When these tufts are larger, and covered with coarse and bristly hair they indicate an early or late cessation of milking in proportion to their size and coarseness.

3. *Epi babin*, lip shaped tuft. This is only seen as a sign of deterioration in the first two classes; it is made by descending hairs, and is a defect for milking qualities. It is like a string hanging over the top of the vulva, and making its outline a little below it on each side. It is seldom seen.*

4. *Epi vulvé*, vulvan tuft. This is also a deteriorating sign; is a tuft of descending hair directly under and attached to the vulva, as in class one, order three. Its lower end is usually round, sometimes forked; the hair is descending, and with a whitish gloss, the coarser and larger, the less the supply of milk.

5. *Epi batard*, perinæal tuft. This is always a bad mark, as it exists on otherwise good marked cows, and indicates a diminution of milk, as soon as the cow becomes pregnant. It is seen on class one, bastard. A cow is to be looked upon with suspicion that has this mark largely developed. It is the shape of an egg; the hair is whitish; if coarse and large, do not buy such a cow, she will fail rapidly and not pay to keep.

6. *Epi cuissard*, thigh tufts. These are diminutions of the escutcheon by encroachment of descending hair, and denote a diminishing of the quantity of milk, proportionate to their extent, and coarseness and whiteness of the hair. See class one and two, order four. Usually on the right thigh only, but found on all classes, and reduces the value one or more orders.

7. *Epi jonctif*, mesian tuft. The mesian or dart-like tuft, with soft silky ascending hair, is rarely seen, and only in those classes in which the escutcheon does not ascend to the vulva. It is like a V, or dart, hanging beneath the vulva, and is not fully represented in the plates, though class ten, order two, shows it somewhat. It is a good sign.

Of the Bastards.

In his examinations Guenon found cows of apparently each class with certain variations in their markings which distinguished them and prevented their incorporation into any class, and, yet the similarity gives them a claim in their particular

* If on one side only, it is usually to the left. It is of descending hair, whiter and more shiny than the surrounding hair. It is from one and a half to two inches long, of little breadth, and is a sign of dwindling of the milk, which will be greater or less according to its size and the coarseness of the hair.

class. In all cases he claims to have noted that cows thus marked would milk as well as other members of their class, until they were got with calf, but as soon as this was accomplished, the quantity of milk fell off rapidly. The commission claim it is this style of marking which is most likely to deceive the superficial or amateur investigators, and that these have caused the assertion that a poor cow may be well marked, when in reality, if properly understood, she was *not* well marked. This class of cows Guenon styled *Bastards*, and he practically assigned them to a distinctive or seventh *order* in each class.

Guenon denominates those cows which give milk, much or little, so long as they are not got with calf, but, when impregnated, begin to fall off in their milk, as *batard* which means, in English, bastard, spurious, of a mixed breed, mongrel. We should have preferred to call them spurious cows, as the term bastard does not exactly express the meaning we apply to that word; but, as it has before been translated bastard, and is so known by many, we retain it.

The bastards are often the best looking cows; have finely developed escutcheons, and many give a great deal of milk, some poor quality and some rich; but, as soon as they are pregnant, they go dry very soon, or fall off rapidly in their milk, while others give very little milk at all. From their fine show, they deceive a great many, and Guenon cautions buyers, as the most skillful will make mistakes. He has, however, given a series of drawings, by which they can generally be discovered.

These bastards mostly conceive well, and the first time they are put to the bull. The flow of milk is at its height during the first eight days after calving, though of bad quality. It then diminishes a little, and keeps on at about the same yield until she conceives again, when it diminishes again, more or less rapidly, often so much so, as not to supply sufficient milk for their calf.

To discover a bastard, consult the engravings which are given to each class. To the first class, the Flanders, there are two kinds. The first, which is the most common, has on each edge of the vertical escutcheon, a feathery appearance, and where this is strongly marked by the down—and up-growing hairs

meeting, and they interlock and stand out from the skin, and, besides, are harsh and wiry, and generally shiny, glistening, and looking of lighter color, *beware of them*. The harsher, coarser they are, the shorter time will the cow milk after getting with calf. The second kind of bastards among the Flanders will have an oval on the *vertical* escutcheon, generally near the middle part, of about two to three inches in length, by one and a half to two inches wide, on which will be found coarse wiry hair, and the harsher it is, and the larger the oval is, the sooner the cow will cease to milk. It may often be discovered by the whitish glistening appearance of the hair on it.

On all the other classes, the bastard marks consist of two oval patches of hair, one on each side of the vulva; and the larger they are, the more pointed in shape, and the coarser and more wiry the hair on them, the sooner the cow will cease to milk.

The importance of learning the bastard marks is very great, as the buyer can safely avoid them, and leave them to those less skilled. While he may buy the less showy cow for much less money, and get a better animal than the unskilled man will obtain even for the higher price.

Of the Ovals.

The ovals on the udder are spoken of by Guenon, and our experience is that they are always indicative of a good yield; particularly, when they are uniform in size and position, and of fine, soft hair, descending on the udder. But there is another set of marks, which the Pennsylvania Guenon Commission have denominated thigh ovals, which are an invariable indication of a good cow, particularly when she is otherwise well-marked. Of these, Guenon does not speak. Eusebius H. Townsend and Chalkley Harvey were the first to call attention to them, and Charles L. Sharpless has written of them. Our own cow, which took the premium over all the Jersey cows, at the exhibition of the Chester County Agricultural Society, has them most extraordinarily developed. As she is a very thorough example of this marking, we have had the likeness made of her escutcheon, and request the reader's attention to it. Where the vertical escutcheon joins and widens out into the thigh escutcheon, there is usually a dip of a curved

shape more or less in extent. In the plate above alluded to these thigh ovals descend nearly to the base of the udder. In their careful examination of more than two hundred cows, the commission always found these marks only on good cows. We think this an attempt of the cow to have four udder ovals, and that the four are joined together into two.

Guenon claimed that cows generally give their highest quantity of milk in the eight days following their dropping their calf, but that the milk is not fit for consumption by human beings. We usually consider it good after the ninth milking; and there is no doubt, as soon as impregnation takes place, the milk undergoes some change, and in all classes and orders diminishes, in order to allow nature to act properly. For as the first law is to increase and multiply, the system of the cow must use much of its energies for that duty, and therefore cannot as well perform at the same time the duty that civilization demands of her, viz: the supplying us with milk.

All animals are more readily judged correctly, and the system can be learned more easily, in summer than in winter, both on old and young; for then the winter coat of hair is off, and the hair is shorter, and the escutcheon is more easily perceived. The skin, also, is more natural and soft, and the hair is usually not so harsh to the feel; and the cows are cleaner, and all marks or blemishes more quickly seen.

How to Apply the System Practically.

We will now proceed to apply the foregoing rules and hints practically. In doing so, we may repeat some that has been before said, but it will only impress it the stronger in the mind of the learner.

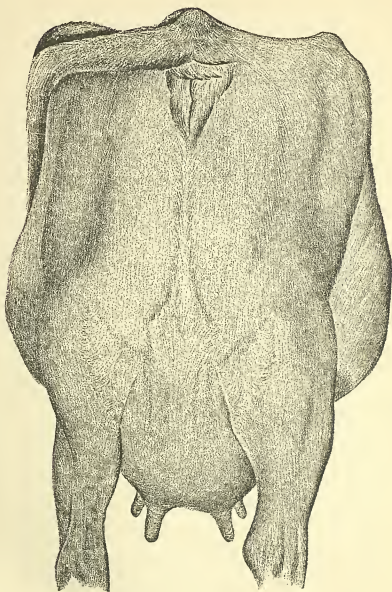
This classification embraced all the kinds of cows known to Guenon, each individual escutcheon corresponding with one of the orders of those classes. The *class*, the *order* and the *size* of an animal indicate her yield of milk, and this will always be found to correspond with her escutcheon. Animals of the same breed and orders give nearly the same amount of milk, varied by the size and weight, and often by their conformation for milk-giving. Every cow has an escutcheon which can be recognized, and according as it is free from blemish or imperfec-

tion, just in that degree does she approach perfection in her class.

Guenon, in the last edition of his work, has altered and simplified his classification somewhat, for he divided it into ten CLASSES, and six ORDERS to each class. He maintained his three grades of size, large, medium and small; but our experience shows that the cows in this country do not vary so much in size as they do in France, for there they have the little Brittany cow, which is very small but good, and, of course, they have also cows as large as our Durhams or the Holsteins. Only this, bear in mind, that cows, as a general rule, all other things being equal, will vary in their *yield* somewhat according to their size and weight: and in judging cows apply that rule, for it is part of Guenon's system, and they will vary in the *quality* according to the breed. Well, then, for practical purposes, we need only study sixty *escutcheons*, that is ten different shapes called *Classes*, and six grades to each of those shapes, more or less perfect, which are called *Orders*. To these must be added ten more for a *Bastard* to each class. And it is really necessary to study perfectly only the first four orders of each class and the *Bastard* marks, as it is not worth while to purchase or pay much attention to any cows lower in the scale than the fourth order of any class. And to simplify it still more, you will notice the *thigh* escutcheons of the first classes have all nearly the same shovel shape, so that by remembering this you need only study the *vertical* portions to readily place the animals in their proper class.

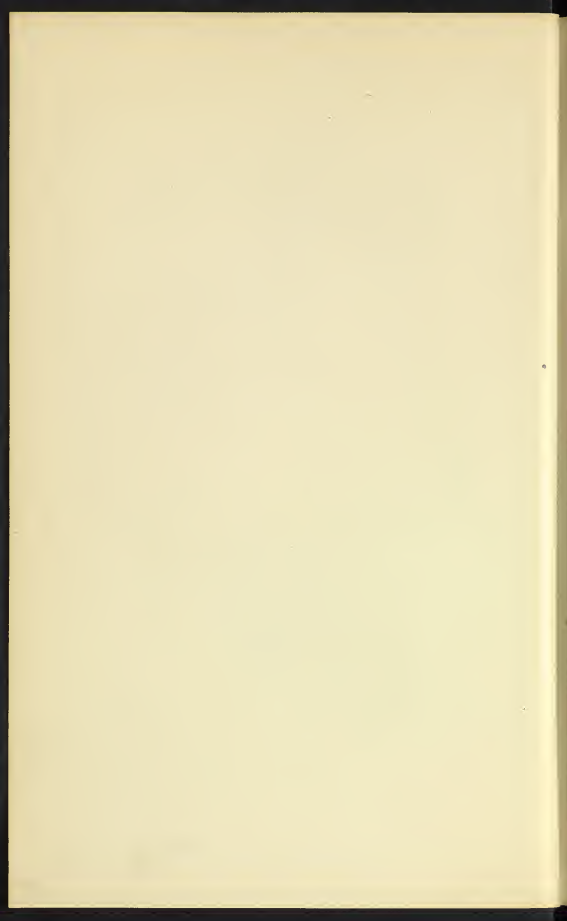
The Escutcheon.

The escutcheon was so-called, we presume, from its similarity to the shape of a shield or escutcheon, and on a first-class cow it will be very like it, and somewhat like a round-pointed shovel. On this escutcheon, the hair will generally be of a different color from that bordering it, most generally rather darker, always shorter, and more nearly resembling fur. This difference in color is produced by the UP growing hair contrasting with the DOWN growing surrounding it. The hair of the escutcheon should be short, soft and fine; and the skin very soft, like a kid glove, thin and oleaginous. And if the cow gives good rich milk, this skin will be of a rich, golden, or nankeen



ESCUTCHEON OF ROSIE.

THOROUGHBRED JERSEY COW BELONGING TO WILLIS P. HAZARD.



hue. Often where you handle a skin of this character the hands will feel oily, and soiled with rich dandruff.

Classification by the Shape of the Escutcheon.

The escutcheon varies in shape, and Guenon named his ten classes from their shapes.

The first class, he called Flandrine or Flanders, because it is the best, and he named it from the best cows he knew, those from Flanders, or the Flemish breed, and they had more of this shaped escutcheon than any other breed; a quiet but sure proof of the truth of his system.

The second class he called Flandrine à gauche, because although it had the Flanders shape, it was on the *left* flank, he called it, therefore, the Left Flanders.

The third class are the Lisière, or The Selvage, from its appearance to a selvage, or binding of a piece of cloth.

The fourth class are the Courbe-Ligne, or the Curveline, because their escutcheon is lozenge-shaped, formed by a curved line starting from the right and left, and rises to about five or six centimeters, or two to two and one-quarter inches below the vulva.

The fifth class he denominated Bicorne, or the Bicorn cow, because the upper part of this escutcheon forks in two horns, the left usually the highest.

The sixth class, Double-Lisière, or Double Selvage, has an entirely arbitrary name; it is odd, and is like the Selvage, but divided in its whole length.

The seventh class is called Poitevine, or Demijohn, from a fancied resemblance to some kinds of demijohns, or *pot de vin*.

The eighth class is Equerrine, or Square-Escutcheon, as it is square at the upward part, like a carpenters square.

The ninth class is the Limousine, as it was on a cow from that Province that Guenon first saw this shaped escutcheon.

The tenth class is called Carrésine, or Horizontal, because the upward part of the escutcheon is cut off squarely by a horizontal line.

To each of the above ten CLASSES, Guenon has placed six ORDERS, which are variations of the escutcheon, formed by a reduced size and by various imperfections. Though Guenon

says his numbering of classes first, second, &c., does not indicate their relative degrees of merit, yet that it is true that in the yield of milk there is some difference. Undoubtedly the Flandrines generally yield more and milk closer up to next calving, but that is not enough to undervalue the other classes. Our experience is for quantity and persistence, the Flandrines are more to be relied upon; the Selvage and the Curveline come next, the Bicorn and the Double Selvage next, and the rest must be classed in a rather lower group. In every class a first-rate cow in the first order may be relied upon, and will not vary much from others in the first order of any class, either for quantity or quality. Eurotas was a good evidence of this, for she was a first-order of the 10th class, or Horizontal escutcheon. But as a general rule, if the reader will remember that the first four classes are better than the next three classes, and these three classes better than the last three of the classes, he will have gained the first step in acquiring the system. Then the next point to remember is similar, but more decided, that is, that the first *order* of every *class* is better than the second order of that class, and so on down the scale of the orders, until the sixth. Then he must learn the different shapes; first, the characteristic shape of each class, as represented by the first order of that class, and connect with this, in his mind, the number of quarts a first-class cow, in good feed and condition, should give, as represented by that escutcheon, in her full flow of milk. Then he can next learn the variations in size and shape from this pattern escutcheon, and that will enable him to tell which order of her class to put her in, and that will then inform him what quantity of milk she will give, and how long she will give it when with calf. And we repeat here, it is necessary only to acquire the knowledge of the first three or four orders of each of the ten classes, as if the cow examined does not come within those orders, she is not worth examining further nor keeping longer, nor certainly worth purchasing. Then the learner must next acquire a knowledge of the distinguishing marks which point out a Bastard cow, for an account of which marks, see under that head.

There is one more point we will venture to add, and that is that different breeds are apt in the best cows to have a distinctive escutcheon of that breed; for instance the Friesian

breed will carry as a breed more of the Flanders escutcheon, as will the best of the milking strain of the Short-Horns; the Selvage is more often seen on the Jersey; the Curveline on the Guernsey and upon all good bulls; (the Guernsey also have many specimens of the Flanders, third order) the Bicorn and Double Selvage are also often seen on the Jersey, as well as on the Devon. With a knowledge of the habits and yields of the different breeds, and considering the signs of each of the animals, he will the better judge the amounts to place to the credit of these escutcheons.

Now all of this knowledge must, to put it into profit practically, be supplemented by the careful examination of the hair and the skin of the escutcheon and the udder; of the hair, whether it is short, fine, soft and furry; of the skin, whether it is soft and close-grained like a kid glove, thin, oleaginous, and yellow or golden. For if the hair is harsh, and long, particularly on the back part of the udder, it will shorten the time of giving milk, and indicates a poorer quality. The more oily or greasy to the feeling the skin of the udder and the perineum is, the more it indicates good quality and richness of milk, for the oil or fat is there, showing it is in the nature of that animal to give butyraceous milk. So with the color of the skin, if it is golden it is indicative of rich milk, and the majority think it will make a finer colored butter. There is one point more in judging by the escutcheon, and that is its size and position, and the general rule is, the higher up it is on the thighs, and the broader it is on the thighs, together with the higher and broader it is on the perineum, even up to the vulva, then the better it is. Then remember the escutcheon has two principal parts, called the thigh escutcheon and the vertical escutcheon; the thigh escutcheon extends over the udder and the thighs; and the vertical is over the perineum or that part of the exterior which extends from the udder up to the tail and above the vulva.

If the thigh escutcheon is high and broad, therefore very large, and extends far outward on to the thighs, it indicates a large flow of milk. If the vertical or upper part is broad and smooth, it indicates a prolonged flow of milk.

If the thigh or lower portion of the escutcheon is narrow, the flow will be proportionally small. If the vertical or upper part is narrow and irregular, it is unfavorable to a prolonged flow.

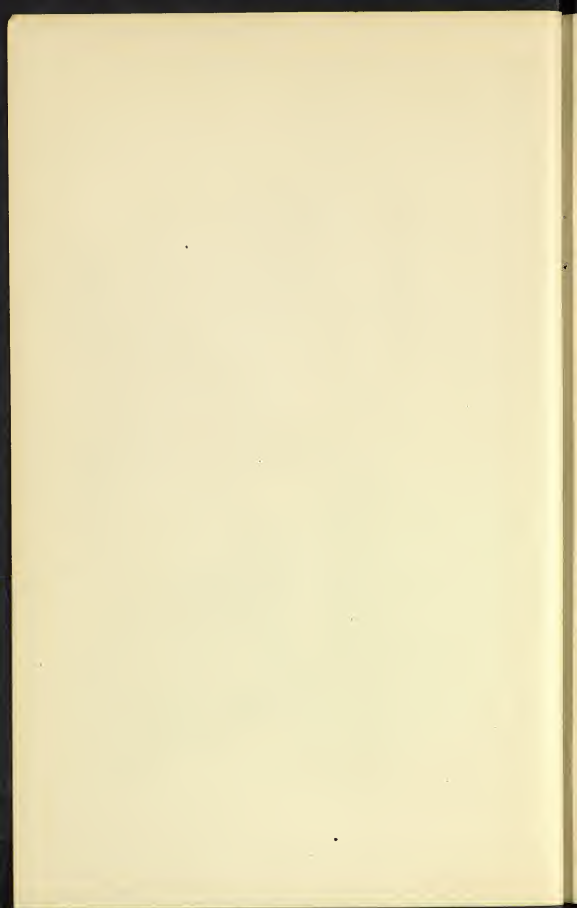
Judging of the Quality.

Chalkley Harvey says further of these marks: "Imperfections, that is blemishes of form, occur in considerable variety on both large and small escutcheons. They are all certain evidence of a diminished value of the cow as a milker. A small and imperfect escutcheon on a good cow, is something I have never yet seen. Any want of symmetry in the form of an escutcheon is an imperfection. The two sides should be alike. A small but perfect escutcheon may be better than a larger one that is imperfect. A very good one is both large and perfect.

"Thus far we have considered the escutcheon in reference to its form and size alone, and may now say, that the quantity of milk depends on these, but its quality is indicated by other signs, which we find to a great extent in the same place. It is too well known to require any assertion, that some cows give a large quantity of very poor milk, and others an equally large quantity of rich milk. It is equally well known that some cows give but little milk, though they yield a good quantity of butter; and I repeat, that the signs indicative of these differences of quality are found in the escutcheon, and they are easily recognized. If the skin in the escutcheon is soft and oily, and particularly if it is of a rich yellow color, (though this is more easily seen by examining the end of the tail), suggestive of "gilt edged" butter, that cow will give good milk. In such cases we will find her hair soft and short. There may be some long hairs, too, but the undergrowth will be as mentioned, and often has almost the quality of fur. But if, on the other hand, the skin is white and dry, and the hair thin and harsh, the cow gives poor milk. If her escutcheon is large and symmetrical, she may give a large quantity of poor milk. The form and size of the escutcheon indicate *quantity*, the skin and hair indicate *quality*. These signs are true also as applied to bulls, being in such cases a proper guide in the selection of animals to breed milkers from. My own experience and observation, which has been considerable in the matter, convinces me that cows inherit their milking qualities more from their sires than from their dams; and it is probable that many who have been disappointed in heifers raised from some favorite milkers, will be disposed to agree with me. If this be true, then the Guenon method has an application that must prove



ROSA—IMPORTED JERSEY.



valuable to those who breed cows for dairy purposes. Another interesting fact is, that we can discover all the signs on a calf, and are thereby enabled to select with much certainty those that are fit for the dairy, and to reject those that would be only a disappointment, if raised for that purpose. Of course, a very small cow, with ever so good an escutcheon, cannot be expected to give a very large quantity of milk, and might be inferior in that respect to one having a less perfect one, where the animal is of greater size. But in such cases, the small cow would give much more in proportion to the cost of keeping. In all cases, therefore, the size should be taken into account.

"There is a sign that may be mentioned here, (though it does not properly belong to the Guenon system), which is a very certain evidence that a cow will give a large quantity of milk, though it expresses nothing in relation to quality. It is the large size of the vein running forward from the udder, on the belly, and just under the skin. This is called the milk vein, and when it is very large and crooked, and enters the abdomen through a hole that will allow the entrance of a man's finger, it is, I repeat, a sign that the cow will yield a large quantity of milk.

"The time that a cow will continue to milk after she is with calf, varies in different cases—some ceasing almost as soon as pregnant, and others milking up to calving. Generally the best milkers milk the longest. Hence it follows, that a good escutcheon usually indicates continued flow as well as large quantity. Those escutcheons that are not large at the base, but that run up to the vulva symmetrical all the way, and pretty wide, indicate a yield of milk up to the time of calving."

Best Mode of Judging Stock.

The beauty of the Guenon system is, that *it is an aid to all other modes of selecting stock*, and therefore, it gives a decided advantage to the person who understands it over the one who does not. For instance, let two buyers go into a herd, and let them be equal judges of stock, one of them will be very apt to buy a bastard, while the other one would very positively leave her alone, simply because the latter has a knowledge of the best and surest mode of all modes of judging stock. And this knowledge does not prevent him from using his half a dozen other modes of deciding its merits, but aids them. So, too, in

selecting a bull for a propagator, the believer in Guenon will select one with a good escutcheon and a fine skin, while the other will decide almost entirely by the form. And so with calves, the one who selects calves by the Guenon marks will be pretty sure to have a dairy of productive cows, while the other will have to dispose of some unprofitable ones. The one makes money, because he is working intelligently with every light of science, while the other is only *guessing* pretty well.

We first look at a cow from the front, and see that she widens as she gets back to her hips, or is wedge-shaped. Next we look at her side, and we again see that she rises on her back and descends on the belly as she goes back to the tail, or in other words she is wedge-shaped, too, from this point of view. These two looks at her have enabled us to see that she has a feminine appearance; that her head is small and neat in proportion to her body, and that it is well set on her neck; with a waxy small horn, a mild but large eye, a broad muzzle; that she has a good chest, and large deep paunch, with large full ribs, fuller below and joined to a rather high back bone; that is to say she has not the breadth of back we look for in a beef animal. If the chine is double, it indicates a cow above the average; if the chine is single, sometimes we can lay our three fingers in three depressions in it about the middle of it, showing that she is a loose rangy cow, and fitted for her work. Now we will look at her udder and see that it runs forward as level as possible to the belly, and that it is large, with four good-sized, well-shaped teats slightly strutting from each quarter. Now we gently approach her, and pat her to gain confidence, and get a chance to feel her hide, her milk veins, and examine her escutcheon. If we find her skin is thin, soft, and greasy, with short fine hair, with rather a furry nature, and showing the skin yellow under it; that her udder and her perineum have soft thin skin, with very short furry hair; that her milk veins are large, zig-zag, and knotty, entering the body with good-sized holes, and particularly if this vein is double, extending and ramifying over the udder well back in prominent veins, and if the veins extend over the perineum; we may then, with great confidence, look for a large well-shaped and formed escutcheon, marked first class, order first, by an oval on each side of the back of the

udder, and perhaps two thigh ovals or dips where the vertical escutcheon rises from the broad or thigh escutcheon; and just to finish and find all points corroborating, we will look on the vertical escutcheon for some spots of oily lemon colored dandruff, and at the end of her neat, lightly made tail to find some large yellow pieces of dandruff. We don't like to see it dry and brown; and as we step back from her, we just give a parting look to see that her hips are rather large, bony, somewhat drooping, that her capacious udder has room to project between her legs.

We like also to see the curl in the hair on the back as near the middle point of the back between the horns and the root of the tail, as possible; the farther back from the shoulders, and the smaller and finer, the better it is, and the more milk and better quality of it, the animal will give. This is the way it is usually found on the best cows, and on those with sharp ridged backs. The farther forward towards the shoulders it is seen, the more the tendency of the animal is to beef and coarseness; especially if the curl is large, irregular, or several of them, and there is much hair over the shoulders, and of a coarse nature; such animals are apt to be beefy, and heavier front than back; will be found to have some imperfection in the escutcheon, and not as long or as deep milkers. We don't like them either as well for safe, constant, reliable breeders.

Then, we feel sure that a loose, open made cow, rather pointed, or sharp and well-defined, and the contrary of what we would look for in a flesh or beef producing animal; with a skin mellow and yellow, covered with soft, fine hair, and the nearer it comes to the quality and color of a first-class Guernsey or Jersey cow, breeds which have for hundreds of years been bred for butter making, then we repeat we know she must be a good, rich milker and butter maker; for we never saw a thick, hard skin cow, with coarse, long hair, that was a good butter maker, or fit for anything but giving poor milk, *if* a strong milker.

Other points for *quality* that we have been experimenting upon for years are: We examine directly under the lower jaw, or chin; here we will find two fleshy projections; the more these are separated from each other, the fuller, plumper and fatter they are, especially if of a golden color, the more we like the cow. Next we take the flank skin in our hand, and push-

ing the thumb up and at same time bringing the two forefingers down, it will bring to view the inside of the skin, which will show us the color and quality of that skin and hair, show us whether the skin is thin, soft and rich; and at the same time we like to see their flank skin large and deep, well stretched by a full, deep udder.

To estimate the number of pounds of butter per week that any cow will give, requires practice. Test each of your cows, and carefully examine all the points of her for quantity and quality. Thus knowing just how many quarts per week your cow is giving, and how many pounds of butter she yields, you divide one by the other and thus get an accurate result. Then you practice on other cows. For instance, I examine a cow; I judge she will yield sixteen quarts per day; then I examine her points for quality, and I say if she is properly fed that it would require eight quarts of her milk to make a pound of butter, therefore she would make out of her sixteen quarts of milk two pounds of butter per day, or fourteen pounds per week. Of course this would be modified by her care and keep, her period of gestation, her duration of milking, the climate, the build and shape of the cow, the fineness of her hair and skin, &c. But with practice and judgment in interpreting the signs, you will be able to tell to a pound per week, what her escutcheon, conformation, size and quality points will unfaillingly indicate to you.

Our preference is for a medium sized cow, one that will dress five hundred and fifty or six hundred pounds; and, as far as our observation goes, a Jersey sire, with an Ayrshire dam, is a good cross for a milk and butter cow, and the most profitable for the amount of food consumed; though a Guernsey or Jersey sire to the milking stock of Durhams, or a Friesian, or a large yielding native cow, will produce a better cow for butter than the mother was. A Guernsey bull is the most valuable of all to enrich and improve any breed.

To get thorough practice in valuing the escutcheon, take this book in hand, and go into your dairy-yard; compare the escutcheon of each cow with her picture in this book; see what it calls for time and quantity, and then thoroughly test your cow; don't guess at it, as most farmers do; and make your own comparisons. Remember the size and class of the escutcheon

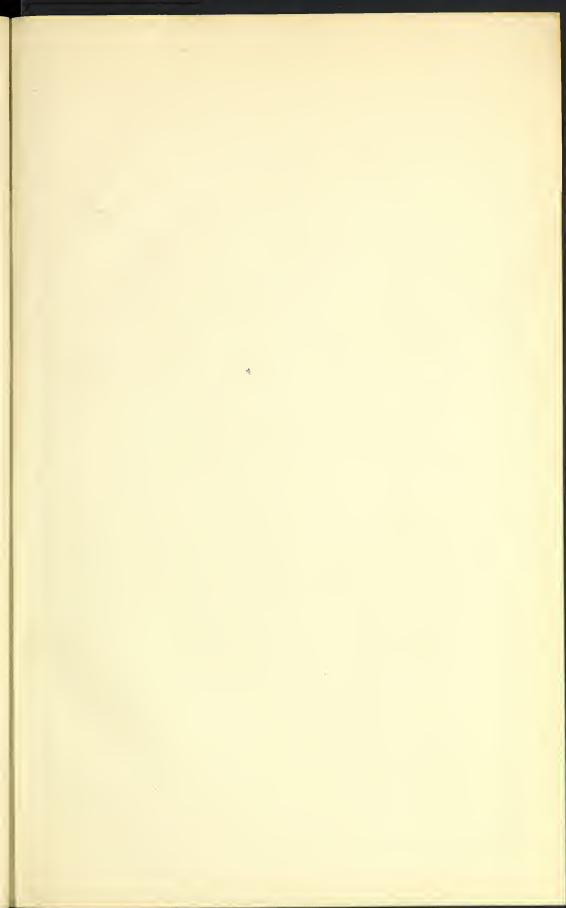


FIG. 1.

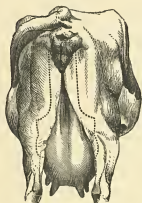


FIG. 2.

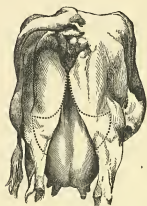


FIG. 3.



FIG. 4.

will give you *the quantity and time*; the skin and hair will give you *the quality*; and always remembering the size of the cow, and of what breed she is, for they must qualify your opinion somewhat. Also, that a cow near calving will have her escutcheon so expanded as to make it appear larger than usual; allowance must be made for this. They are also more visible on fat cows than on lean ones.

C. L. Sharpless on the Escutcheon.

We extract from our book on "The Jersey, Guernsey, and Alderney Cow," some remarks on the escutcheon, by the late Charles L. Sharpless, of Philadelphia. These remarks are mainly based upon the escutcheons of the Jersey breed. He was one of the best judges, a most intelligent breeder, and had paid the highest price ever given for a Jersey cow in his time.

"There is no point in judging a cow so little understood as the escutcheon. The conclusion of almost every one is, that her escutcheon is good, if there be a broad band of uprunning hair from the udder to the vulva, and around it—see Fig. 1. These cows, with the broad vertical escutcheon, are nearly always parallel cows; that is, with bodies long, but not large, and with the under line parallel with the back. Their thighs are thin, and the thigh escutcheon shows on the inside of the thigh, rather than on its rear.

"Next comes the wedge-shaped cow, with the body shorter, but very large, deep in the flank, and very capacious. This form does not usually exhibit the broad vertical escutcheon, running up to the vulva, but with a broader thigh may exhibit a thigh escutcheon, which is preferable to the other, thus—see Fig. 2.

"In both vertical and thigh mirrors, where the hair runs down, intruding on the udder, (as low as above the dotted lines,) as in Figs. 3 and 4, it damages the escutcheon. If you find a cow with the hair all running down, and between the thighs—that is, with no up-running hair—stamp her as a cipher for milk-yielding.

"The artist has made the udders to Figs. 1, 2, 3, 4 the same size, while in reality they will vary according to the escutcheon.

"There are times when the udder of a cow, with an escutcheon like Fig. 4, will be enlarged by non-milking, for the purpose of deception. It is always safer to judge by the escutcheon, rather than by the large size of the udder.

"The escutcheons of the best cows—those yielding the most and continuing the longest—will be found to be those which conform to Fig. 2. [Mr. S. alludes to the selvage; one of the

best, and common among the best cows, especially of the Jersey breed.—H.]

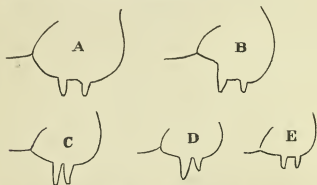
"The vertical escutcheon of Fig. 1, would not injure it; but if that ornamental feature has to be at the expense of the thigh escutcheon, Fig. 2 is best as it is.

"Whenever an escutcheon is accompanied by a curl on each hind-quarter of the udder, it indicates a yield of the highest order. * * * * *

"So far we have noticed only the rear escutcheon, or that which represents the two hind-quarters of the udder. The two front quarters are just as important, and should be capacious, and run well forward under the body—see A. If the udder, in front, be concave, or cut up as in B, indicating small capacity, it represents reduced yield.

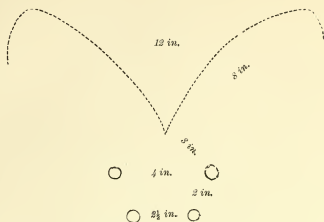
This front or level escutcheon is distinctly marked in the young heifer or bull, and can be seen by laying the animal on its back. The udder hair under the body all runs backward, commencing at the forward line of the escutcheon—see dotted lines in Figs. 6, 7, 8. This dividing line is very perceptible, from the fact that the hair in front of it all runs forward towards the head of the animal, while the escutcheon, or udder hair, all runs backward over the forward quarters of the udder, around and beyond the teats, and ceases at the markings of the rear escutcheon, on and between the thighs.

The breadth and extent forward of this front escutcheon, indicates the capacity in the mature animal, of the front quarters of her udder. In some cases this front escutcheon will be found of twice the extent that it is in others, and is evidence of that much more yield. The dimensions of Figs. 6, 7, 8, are actual



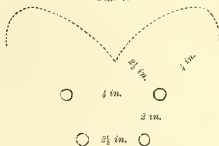
measurements—the first two of heifers, and the last of a bull. If Fig. 7 represents four quarts as the yield per day of the front quarters, Fig. 6 will represent eight, thus, if the rear yield is the same, say four quarts in each cow, the total yield of Fig. 6

Fig. 6.



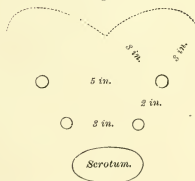
LOTTIE STARR.—10 mos. old.

Fig. 7.

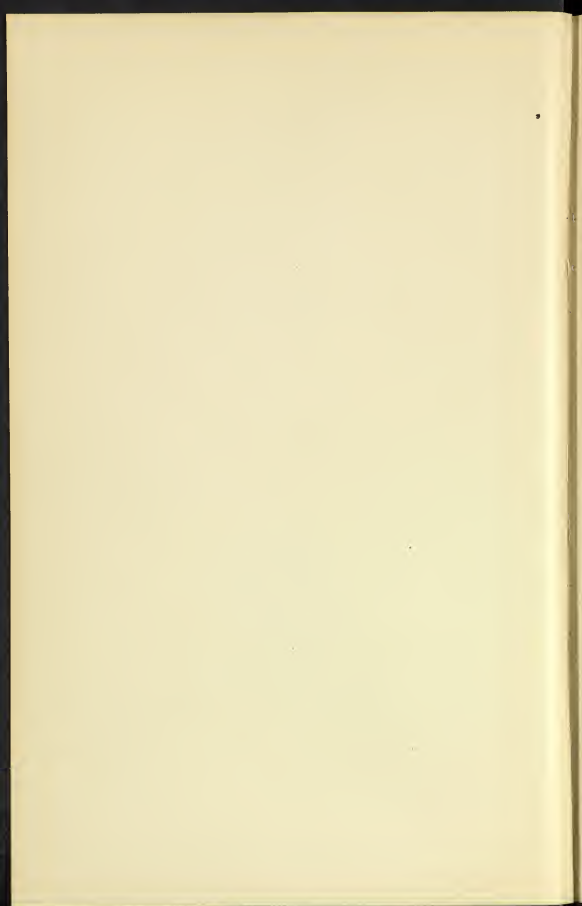


SYLVA.—10 mos. old.

Fig. 8.



COLUMBUS.—10 mos. old.



will be twelve quarts, while that of Fig. 7 is but eight. This examination enables one to see the size of the teats and their distance apart, and to test the looseness and softness of the udder skin. It is marked precisely the same in bulls, see Fig. 8, and can be easily examined at any age between one and ten months.

"Udders of all shapes hold milk, and some homely ones hold a large quantity. B, C, D, and E, at a glance explain their deficiencies, both of shape, lack of capacity, and bad style of teats. In udder A, we have the perfect shape. * * *

"Many think that the escutcheon of the bull is of but little moment, so that he is a good-looker. So far is this from being the case, that a bull, with a mirror like Fig. 4, or worse, will stamp his escutcheon on, and to that extent damage his daughters, out of cows with escutcheons as choice as Fig. 2. In this way the daughters of some of the best cows come very ordinary, while, if you use a bull marked like Fig. 2, he will make poor escutcheons better, and will improve the best. His injury or benefit will be doubled, according to the escutcheon markings under his body in front of his scrotum. Hence the importance of the dam of a bull being unexceptionable in her udder and escutcheon. Her qualities, inherited by her son, will be transmitted to his daughters.

[Mr. Sharpless' bull Comet of M. was one of the finest Jersey bulls we ever saw, and his escutcheon is unexceptionable, being a perfect curveline, the one most commonly found on bulls.]

"While careful as to escutcheons, we must not neglect the other essential features of a good cow—the buckskin hide, the rich-colored skin, and the fine bone. Let the hair be soft and thickly set, and let the skin be mellow. This latter quality is easily determined by grasping between the thumb and forefinger the skin at the rear of the ribs, or the double thickness at the base of the flank that joins the stifle joint to the body, or that on the inside of the rump-bone at the setting-on of the tail. Let the teats be well apart; let them yield a full and free stream, and be large enough to fill the hand without the necessity in milking of pulling them between the thumb and forefingers. And let us ever keep in mind that the larger yielder must be well fed."

Those who condemn Jersey cows as small yielders of milk and butter, should listen to the story of "Rosa" as told by her owner, C. L. Sharpless. She is five years old, is solid creamy fawn, and, combined with great volume and bone, she is neat in the head and neck, and with fine legs. Her dam was a small mouse-colored cow, and her sire's dam a small fawn-colored, neither of which would give over twelve quarts.

"We found we were making a good deal of butter, and as 'Rosa' looked superbly, we determined to test her butter quality. We fed her per day twenty pounds of hay, eight quarts of meal, and four quarts of carrots. The meal was a mixture of good wheat bran and cornmeal, in the proportion of four bushels of the former to one bushel of the latter. Her yield the first day was sixteen quarts, the second day fifteen and a half quarts, the third day sixteen quarts, and the next morning eight quarts, being in all seven milkings, or half the week. Her milk was kept separate; was skimmed after standing thirty-six hours, and made six and three-fourths pounds of butter, or thirteen and a half pounds for the week.

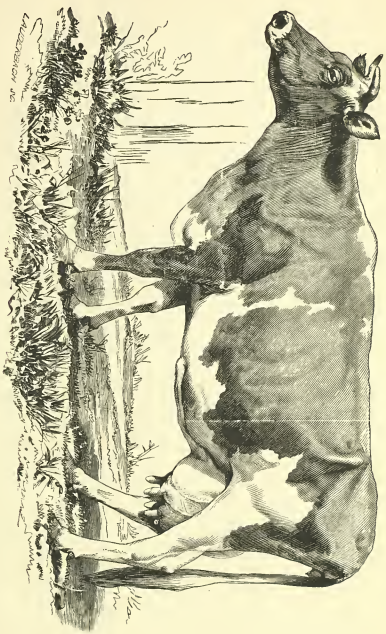
"As you place Rosa and Duchess side by side there are some points of agreement and of difference that are of interest to notice. They are both wedge-shaped, with large body—Duchess the more bony, but Rosa with the greater rear volume, (broader hips, &c). They both have neat heads and necks, and fine bone. Duchess is, in winter, smoke-color, with brilliant white, but not with black points. She has yellow hoofs and skin, and her udder is rich yellow. Rosa has yellow hoofs, and yellow inside her ears, but a pale skin and udder, and would be called a butter cow inferior to Duchess, and yet she has just proved herself one-half pound greater. The color of it is the deepest—no coloring matter being used. This upsets the theory that a yellow skin is essential for deep-colored butter. Perhaps a safer way to put it is, that though a rich yellow skin is evidence of butter quality, yet equally good quality may come from a pale skin, provided the cow has yellow inside her ears.

"Again, as to vertical or rear escutcheons both these cows exhibit, the broad part diminishes as it rises, until, when within six to nine inches of the vulva, it is reduced to the breadth of not over an inch wide. Thus they agree in their rear escutcheons, and they agree also in udders of great capacity, these being deep and broad, and running well forward under the body.

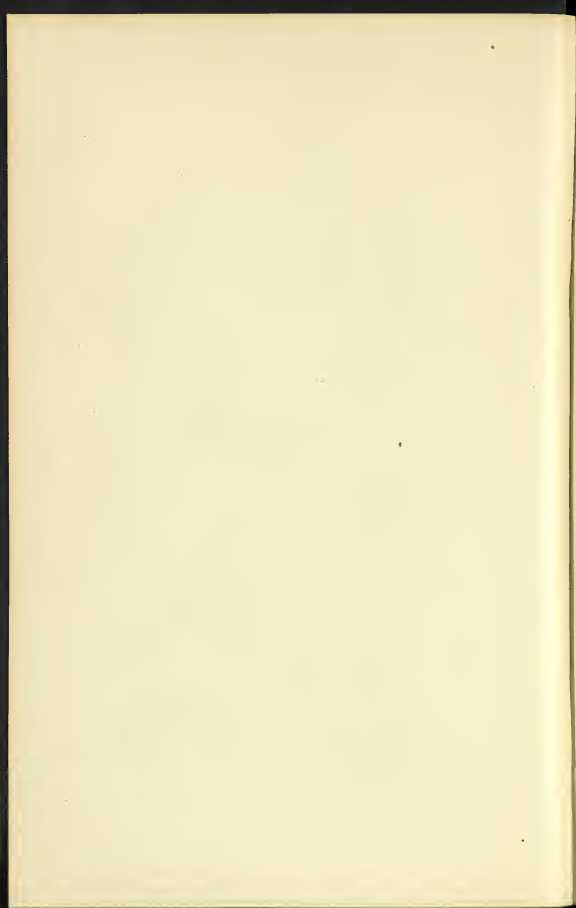
"There is a point on which they differ. The hair on Duchess is soft and furry as a mole; that of Rosa is fairly fine, but still hair.

"So that in a word one can say soft hair, a large escutcheon, and a yellow skin are desirable, but there may be choice cows not conspicuous for either.

"To show how we sometimes let our best animals slip, I will add that when Rosa was a heifer I was tempted to part with her for what seemed a great price—\$500. In about two weeks she had a heifer calf, for which her owner was offered \$150. When three years old she had a second heifer, which he sold for \$180; and when four years old she had a third heifer, which



A PERFECT COW—DUCHESS—IMPORTED JERSEY.



he sold for \$100. He then sold his place and all his stock, and I bought her at public sale for \$375 for her beauty. Her pale skin deceived me as to her butter quality, and her, as I thought, deficient escutcheon misled me as to her large yield. She now, as a five-year old, has her fourth calf, which is a bull, and some two months old.

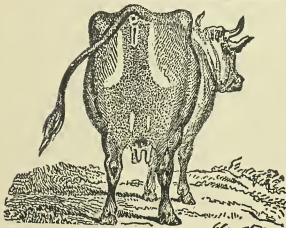
"In giving above her yield, I gave also her feed. Such is her constitution and appetite that I think she would have eaten half as much more, and in that way her yield might have been very much increased. It was good enough as it was, particularly as there have been choice cows so forced that, though the premium was won, the cow was lost. The winter yield, on dry feed, of sixteen quarts is considered equivalent to eighteen on grass."

DESCRIPTION OF THE CLASSES AND ORDERS.

In the following descriptions of the ten classes, and their sub-division into six orders each, we give the quantity as stated, for a large-sized cow; not thinking it worth while to enter so minutely into his sub-divisions of high, medium, and low cows. For instance, to class one, order one, he gives to the high cow twenty-four litres, which is about equal to our twenty-four quarts here; the litre being, according to McCullough's Commercial Dictionary, 61,028 cubic inches, or about two and one-ninth wine pints; Davies & Peck's Arithmetic says it is a little less than an English quart; Greenleaf's Arithmetic says it is about one and one-eighteenth liquid quarts, or to be exact 1.0567 quarts. Then for easy calculation a liter or litre may be called equal to one of our liquid quarts. To the medium cow he gives nineteen quarts, and to the low cow, fourteen quarts, per day.

The size of his high cow is six hundred and fifty to eight hundred, *dressed weight*; the medium, four hundred and fifty to five hundred and fifty pounds; and the low, two hundred and twenty-five to three hundred and twenty-five pounds. As most of our cows will range with the high cows, we have adopted the scale suitable to the size, only the reader who practices the system must keep in mind that the larger and more developed the cow, the more she will be likely to give than the cow of smaller size. No cows are seen with escutcheons proportionated in size to the animal as these; these represent the escutcheon extending in between the thighs, and as if the skin of it was taken off and stretched on a board to show the full extent it covers. But they show the proportionate height and extent on thighs.

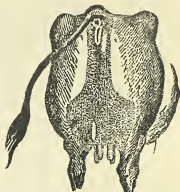
First Class.—The Flanders Cow.



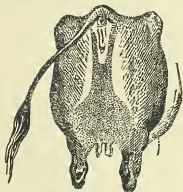
Cows with this escutcheon are the most seldom found, except among the most abundant milkers. In the first order they give twenty quarts per day, in the height of their flow; that is to say, from the time they have calved until they are pregnant again.

Then they diminish, little by little, until their next calving. It is best to dry them off from four to six weeks before calving, to give them a needed rest, and it improves the calf.

Cows of the first class have a soft udder, with fine hair on it, rising until it blends with similar hair growing upward on the thighs, above the hock, and widening on the thick part of the thigh, then narrowing, like in the engraving, until it reaches the vulva, and being about two inches on each side of it. We have seen very large cows with the vertical escutcheon, twice this size, or eight inches broad, and they gave twenty-five to twenty-eight and thirty-two quarts a day. The inner parts of the thigh, and the vertical mirror are usually of a yellowish or nankeen color, with dark spots on them, from which can be detached the dandruff; the more plenty, and the richer in color and feeling, the richer in quality will be the animal and her yield. There are two ovals on the udder, of fine short descending and whitish hair.



The second order of the first class are similar to the first, but the escutcheon is smaller; and on the right side of the vulva is a Babine tuft of descending hair about two and one half inches long and one and one half inches broad, and there is but one oval on the udder. They yield eighteen quarts of milk for a period of eight months.



The third order of the first class is still smaller, and not quite so decided in shape. It has also a semi-circular or vulvous tuft below the vulva extending upwards, so as to enclose it in a fork, of small size, of descending hair, rather shining and of brighter color. There is either only one oval on the udder, to the left, or generally none.

Cows of the third order yield sixteen quarts, and milk for six months, after being gone with calf.

The fourth order of the first class, besides being still smaller, has narrower thigh escutcheons, and lower down; and also the vulvous tuft under the vulva is quite long, about five or six inches, which sometimes make the vertical escutcheon terminate in a fork. This tuft has more lustre and is whiter than the hair around it. There is also a thigh tuft of half oval shape on the right of the escutcheon, about five inches high.

Cows of the fourth order yield twelve quarts a day, and milk until they are five months gone with calf.



The Bastard Flanders have two marks which distinguish them:

1. Some have on the vertical escutcheon an oval tuft, about the middle of it; this tuft has descending hair, is about three inches long and two inches wide, and the shining lustre of the hair makes it appear as if it was whiter than that around it. The larger the oval the sooner the milk will fail, and the smaller it is the longer will she milk, after being impregnated.
2. Other Bastards of this class are distinguished by the ascending and

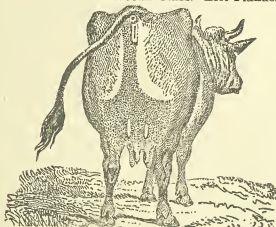
descending hair interfering with each other on the outlines of the vertical escutcheon, looking feathery, or bristling like the beard of wheat. On the inside of the thighs the skin is fine and reddish, but there is no dandruff. The larger the escutcheon, and the finer the hair, the more abundant the milk; but when the hair is coarse, long, and thin, the yield is small and poor. Both kinds of Bastards of this class have every other appearance of the best cows. And all Bastards of the first classes are apt to have the two ovals on the udder. Bastards will be seen in the lower orders also.

To show the importance of studying the Bastard marks let me tell one of many instances in my experience. Passing along in the fair held by the Permanent Centennial Exhibition, I saw some very fine Devon cows from Ohio. Upon one handsome cow there was a blue ribbon; after examining her I said to the owner, "This cow has wrongly received the premium!" "Why?" "Because she is worthless, she gives a fair quantity

of milk, but as soon as she is impregnated, she fails so rapidly that she goes dry for four months, and does not pay for her keep!" "How do you know that, did you ever see her *before*?" "No, but I have seen her *behind*, and her book lays open and I have but to read it." "Now, said he, if you will tell me how you know so much about her, I will tell you all I know." I showed him as perfect a bastard oval as I had ever seen, and the coarseness of the hair, with those unmistakable long hairs pointing at me from the middle of her udder. He then admitted I had given him a full and true account of her, and that he was offering her for sale at one-half the price of his others.

More than a year, or longer, after that, I was examining Dr. J. Chester Morris' herd of Devons, and as I came to a large fine cow, I said: "Here is a cow that is not fit to be in your herd." He cautioned me to be careful what I said about that cow, as she had given him sixteen quarts. "Perhaps she has, but she will do it but a very short time after she is with calf, will fail rapidly, and go dry four months." He thought I recognized the cow, and I told him I thought I had never seen her before. "Why that is the cow that was in the Permanent Exhibition to which you called my attention. She was sold for \$200, and her present owner sent her down to me at \$50, and if I did not want her, to sell her to the butcher; so to the butcher she goes. Your description of her is exactly what you gave of her at the fair; see, here is where I wrote it down at the time." Now, if the buyer had known how to judge he would not have lost his \$200.

Second Class.—Left Flanders.

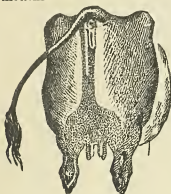


The cows of this class are very similar to those of the first class, though their yield is rather less. The vertical escutcheon is entirely to the left of the vulva, and the thigh escutcheon on the right is broader than that on the left. By comparison with the first class, these will be seen

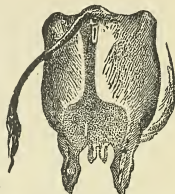
to be very similar, but in each order smaller; therefore it will not be necessary to describe them separately, but simply to state the yield. Cows of the first order of the second class will

yield eighteen quarts, and milk eight months when gone in calf, and some will not go dry; they usually have two fine udder ovals.

The second order of the second class have the Babine or lip-shaped tuft to the left of the vulva, and have one oval on the left of the udder. Cows of this order give sixteen quarts, and milk seven months.



The third order has the same shaped-



escutcheon, but more contracted, and the lip-shaped tuft is larger and whiter. Cows of this order give fourteen quarts, and milk six months, when gone with calf.

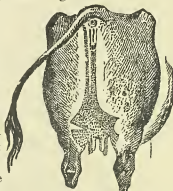
The fourth order has two invasions of the thigh escutcheon by

the down-growing hair, a semi-oval one on the right, and a triangular one on the left. These always indicate a reduced quantity of milk.

Cows of the fourth order give ten quarts, and milk five months, gone with calf.

The escutcheon of the Bastard Left Flanders is known by this peculi-

arity:



The developments are larger and more irregular on the top of the vertical escutcheon, and to the left of the vulva, with bristling hair; on the right is the ischiadic tuft, quite large, from which the hair is diverted in an almost horizontal direction; the larger it is and the coarser the hair upon it, the more rapidly will the milk diminish.

Third Class.—Selvage.

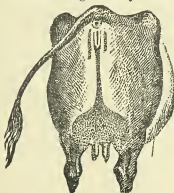


The escutcheon of this class commences above the hock, runs up on the thighs quite high, thence it descends somewhat from both sides to the vertical portion, which rises, gradually narrowing to the vulva. This escutcheon is one frequently seen,

and on the best cows; where it is large, uniform, and clearly defined it is one of the best. The drawing on the Bastard is the one usually seen (without the Bastard marks). It is very common on the best Jerseys.

The first order of the third class has an udder with soft skin and fine downy hair, which, as well as the thighs, are of a yellow or nankeen cast of color. There are two ovals on the udder. Cows of the first order give nineteen quarts, and milk eight months, and often will milk nine months, not going dry unless made to do so.

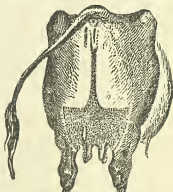
The second order is similar to the first, only of reduced size; it has a buttock tuft to the left of the vulva; and only one oval on the udder on the left side; the hair of the escutcheon is generally more glossy than that around it.



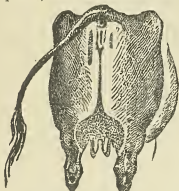
Cows of the second order

give seventeen quarts, and milk seven months.

The third order escutcheon curves downward on each side of the vertical mirror, which rises narrowing to a point at the vulva;

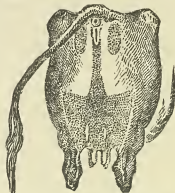


to the right and left of the vulva are Buttock tufts, the one on the left being the longest, as all developments are apt to be more so on the left. Cows of the third order give fifteen quarts, and milk six months.



The escutcheon of the fourth order is of similar shape, but still smaller; but the tuft on the left of the vulva is much longer than on the right, and there is no oval on the udder.

Cows of the fourth order give twelve quarts, and milk five months.



The Bastards of the third class have two tufts, one on the right, and one on the left of the vulva, about four to five inches long, and one and one half inches wide. The smaller they are, and the finer the hair on them, the less rapid is the loss of milk. But if they are large and have coarse hair, and are pointed at each end, they prove the milk to be poor and serous, and the cow will fail rapidly.

The Fourth Class.—Curveline.

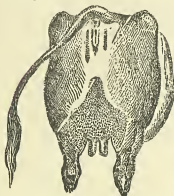


The Curveline cows are very plenty, and are of a very good grade, approaching the first class. The escutcheon is broader than the last two classes, in the upper part. Their skin is of delicate texture, and nankeen shade of color on the escutcheon. The higher and broader the

curved line rises toward the vulva, which it never reaches, the better it is. Sometimes where the point of the vertical reaches up higher, but not so wide as in other cases, it is apt not to be so clearly defined, and the buttock feathers may be there; these are not any sign of disparagement. There are two ovals on the udder. Cows of the first order of the fourth class give nineteen quarts, and milk eight months, and sometimes up to their next calf.

The second order have the same shape escutcheon, but more contracted. There is but one, and sometimes no oval on the udder. On the left of the vulva is a small tuft.

Cows of the second order give seventeen quarts, and milk seven months.

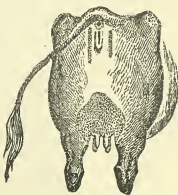


The third order has a smaller escutcheon, with two tufts by the vulva; the left longer than the right, about four inches by one inch wide. Sometimes an oval on the left side of the udder.

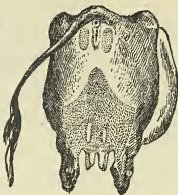
Cows of the third order give fifteen quarts, and milk six months, after impregnation.

The fourth order has a much smaller escutcheon, reaching just above the udder. The two tufts are larger alongside the vulva, and the hairs bristle to each side. On the right, and sometimes on the left also, the downgrowing hair, or thigh tufts, intrudes somewhat upon the escutcheon.

Cows of the fourth order give twelve quarts, and milk five months.



The Bastards of the fourth class have a fine appearance of escutcheon, but they are known by the tufts alongside the vulva. If these have coarse bristly hair, and of large size, say four to five inches long, and one and a half in width, they indicate a rapid loss of milk as soon as pregnant, particularly if they are pointed at each end.



The Fifth Class.—The Bicorn.



The escutcheons of this class in the vertical portion end below the vulva in an indented shape, presenting the appearance of two upright horns, the left one always higher than the right. Their udders are of a saffron color, delicate, with fine, soft hair, and have much dandruff.

This escutcheon when large, clearly defined, and with soft elastic skin and hair, is seen on many of the best cows; it is frequently seen on the Jerseys. Guenon appeared to think higher of it than we do, our experience is it is not often seen in its perfection with clear outlines.

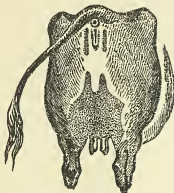
The first order has two tufts of small size along the vulva, and two ovals on the udder. They give seventeen quarts, and milk eight months; a really good cow will even do better than this.

The second order are similar to the first, only smaller escutcheons,



the vulva tufts are longer, and there is but one oval on the udder, on the left. The right horn of the escutcheon is smaller than the left one.

Cows of the second order give fifteen quarts, and milk seven months.

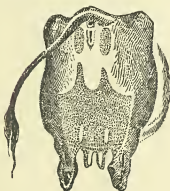
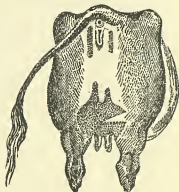


The third order have similar escutcheons to the last, but smaller, while the Buttock tufts are larger, there are no ovals, and there is an invasion of the descending hair on the right side, a defect shortening the supply of milk. The right horn is two inches shorter than the left.

Cows of the third order give thirteen quarts, and milk six months, gone with calf.

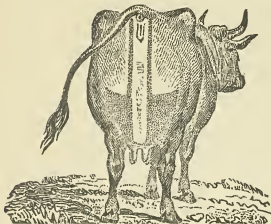
The fourth order have the same shaped escutcheon, but smaller, with two tufts alongside the vulva, larger and more bristling than those on the last. On the right of the escutcheon is a triangular cut in the shape, made by encroachments of the down-growing hair.

Cows of the fourth order give ten quarts, and milk five months, after impregnation.



The Bastards of the fifth class have the full escutcheon of the first or second order, but with two large tufts alongside the vulva, which, according to their size, and more or less pointed shape, and fine or coarse hair, indicate the more or less stoppage of the flow of milk.

The Sixth Class.—Double Selvage.

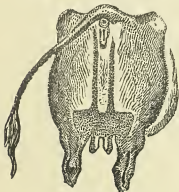
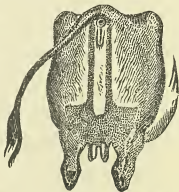


The escutcheons of Double Selvage cows differ from those of Selvage, or the third class, in that the escutcheon is marked in its whole length by a strip of hair descending and dividing it into two equal portions. It is bordered in its whole length and at the extremity by a

double line of ascending hair, which extends the escutcheon up to the vulva. Otherwise it is like the selvage escutcheon. This escutcheon is not very frequently seen, but when it is in perfect condition, and first order, it is a good one. It is more often seen in the lower orders, and where irregular is confounded with the Bicorn.

The first order cows have a fine udder, soft, and covered with a silky down; and its skin is yellowish or nankeen. Cows of the first order give eighteen quarts, and milk full eight months, after conceiving.

The second order have a similar escutcheon, but smaller, and the separating strip ends higher up. Cows of the second order give sixteen quarts, and milk seven months.



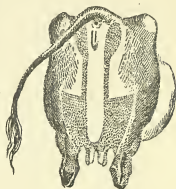
The third order have a still more reduced escutcheon, the descending strip terminating at the udder. Cows of the third order give fourteen quarts, and milk six months.



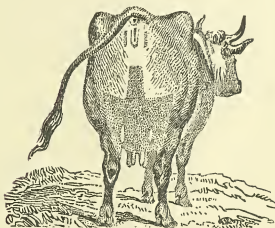
The fourth order have an escutcheon more broken in appearance, the two side lines of the selva terminate half way to the vulva, and end off in lines of a feathery appearance, the hair is coarser and more furry, or denser.

Cows of the fourth order give ten quarts, and milk five months.

Bastards of the sixth class have the escutcheon similar to the first class, but the selva lines terminate on each side of the vulva in tufts of coarse and bristly hair; the larger and coarser they are, the sooner the milk will fail, after impregnation.



The Seventh Class.—Demijohn.



This escutcheon was named Poitevine from the appearance of it to a pot-de-vin, or French wine jug, and being much like our five gallon demijohn, we have so translated it. Guenon thinks more highly of this one than we do, because though really good when good, it is not so often found.

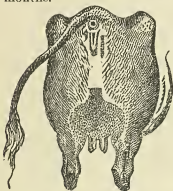
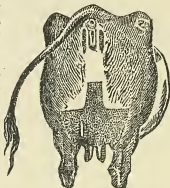
The first order of this class has the skin of the escutcheon of yellowish color. The udder is fine, and covered with a silky down to the inside of the thighs; and the dandruff is soft and oily to the touch. The shape is similar to the selva some-

what, only the vertical mirror rises broader and straighter, and ends half way up to the vulva, cut square off, two and one-fourth to three and one-half inches wide. The broader and higher this part is, the better the escutcheon. The escutcheon is not so high up on the thighs as the previous classes. There are two ovals on the udder, and two small tufts of descending, short and whitish fine hair alongside the vulva.

Cows of the first order give seventeen quarts, and milk eight months, after conceiving.

The second order have the escutcheon lower down and, of course, smaller in every way. There are two tufts alongside the vulva, the left one as large as in the first order, (two and a half inches,) the right one only half as long. There is one oval on the left of the udder.

Cows of the second order give fifteen quarts, and milk seven months.

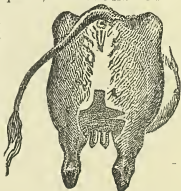


The third order escutcheon is of different shape, the lines converging downwards from the vertical mirror, which is short, and cut off square. The right side frequently has a curved line from the descending hair invading it. The Buttock tufts are longer and wider than in the second order.

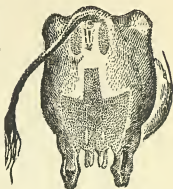
Cows of the third order give thirteen quarts, and milk six months.

The fourth order has the escutcheon still smaller. The tufts alongside the vulva are not so plain, but the hair is coarse and bristly. There is a triangular invasion on the right of the escutcheon, reducing the quantity of milk.

Cows of the fourth order give ten quarts and milk five months



The Bastards of this class have a good escutcheon, but the tufts are large and of coarse, bristly hair, and the milk will fail according to the size of these buttock tufts.



The Eighth Class.—Square Escutcheon.

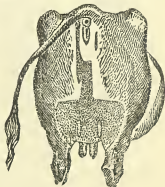


This escutcheon, named from its similarity to a carpenter's square, is seldom seen in perfection. It is more like a Demijohn with the buttock tuft long enough to join it.

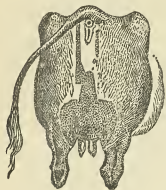
The first order of this class have the same yellowish color on the escutcheon

as other first orders; the udder is flexible, covered with a short, fine down. The escutcheon is much of the shape of the Demijohns, but the vertical, as it rises, branches square off to the left, and ascends, straight and narrow, to the left side of the vulva. There are two ovals on the udder. The more the square approaches the vulva, and the finer the hair, the greater quantity is there of milk. Cows of the first order give seven teen quarts, and milk eight months, after impregnation.

The second order have a similar escutcheon, only smaller in every way. They have two ovals on the udder, and a small tuft to the right of the vulva.



Cows of the second order give fifteen quarts, and milk seven months.

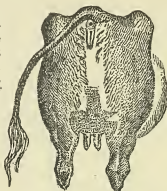


The third order have the escutcheon still smaller; the lines curving downwards at the corners; one oval on the udder, and the tuft to the right of the vulva, larger and of coarser hair.

Cows of the third order give thirteen quarts, and milk six months.

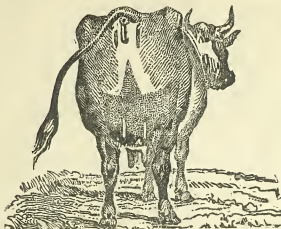
The fourth order have the escutcheon much smaller, the square is much lower, and the upper part of it is formed of bristly hair, and feathery looking; as is also the tuft to the right. On the right side of the escutcheon is an invasion of triangular shape.

Cows of the fourth order give ten quarts, and milk five months.



The Bastards of the eighth class are distinguished from those of the first order by the buttock tuft on the right, which is of coarse and bristly hair, and the square terminates also in the same hairy tuft; the larger these are, and the coarser and more bristly the hair, the more rapidly the cow will diminish her milk.

The Ninth Class.—Limousines.



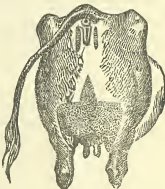
but found on all breeds; though not frequently in perfect shape and first quality.

The first order has the escutcheon of yellowish color, with flexible udder, covered with hair downy and silky. The shape is the same as the seventh and eighth class, except that the vertical escutcheon ends in a sharp point, like a spire or arrow head. There are tufts along each side of the vulva, and two ovals on the udder.

Cows of the first order give fifteen quarts, and milk eight months.

The second order is similar in the escutcheon, but smaller, with but one oval on the udder, and the buttock tufts larger, the left being

longer than the right.

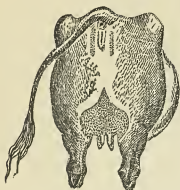


Cows of the second order give thirteen quarts, and milk seven months.

The third order is again smaller; the corners rounded downward; the tufts larger; no oval on the udder.

Cows of the third order give ten quarts, and milk six months.





The fourth order same shape as the last, but still smaller and more rounding. The buttock tufts are of bristly hair, and the left one is seven inches long.

Cows of the fourth order give eight quarts, and milk five months.



The Bastards of the ninth class have a good escutcheon, but are distinguished by the large tufts of coarse, bristly hair alongside the vulva, and they fall off in milk more or less rapidly.

The Tenth Class.—Horizontal.



The first order have a dandruff of yellowish color; the hair is short, fine, and silky; the escutcheon is lower down from the vulva than the other classes, and is cut off by a horizontal line. There are two ovals on the udder; and two tufts, about three and one-

half inches long, on the sides of the vulva.

Cows of the first order give fifteen quarts, and milk eight months.

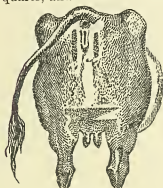
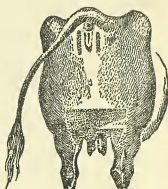


The second order has a smaller escutcheon; the vulva tufts are larger, the right shorter than the left; there is but one udder oval; in several of the orders of this class there is a small streak of ascending hair directly below the vulva.

Cows of the second order give thirteen quarts, and milk seven months.

The third order have still smaller escutcheons; larger vulva tufts, the one on the left of bristling hair, four to five inches in length. The descending hair encroaches on the escutcheon on the right in a triangular shape.

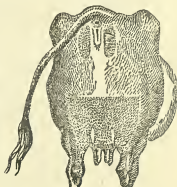
Cows of the third order give ten quarts, and milk six months.



The fourth order have still smaller escutcheons; larger and coarser vulva tufts; and an invasion on the escutcheon on the right in triangular shape, and on the left of semi-circular shape.

Cows of the fourth order give eight quarts, and milk five months.

The Bastards of the tenth class have the escutcheons large and good shaped; but are distinguished by the tufts alongside the vulva. these tell how long she will milk, by their size and the grade of the hair on them.



EFFECTS OF CROSSING TWO ESCUTCHEONS.

Cross Between the Selvage and Left Flanders.



The cows bearing this character are easily recognizable in certain breeds, and notably are those of the north-east of France.

Cross Between the Bicorn and Selvage.

The *Epi*, or tuft, which I termed *jonctif*, or Mesian tuft, and which is seen adhering under the vulva, is a favorable sign, and can be met with in those classes where the escutcheon does not reach as high as the vulva.

Cows which bear one or other of these two escutcheons, are generally good milkers, and preserve their milk as well as cows of the first order of each class. They are the new escutcheons alluded to in Guenon's introduction, showing the effect of crossing.



ESCUTCHEONS ON BULLS.

Guenon applied his discovery to bulls to great advantage. He found that bulls belonged to the same classes as cows, and had escutcheons similar, but much smaller; these extend from the testicles upward toward the anus. The importance of having a good bull becomes apparent when we reflect that he "gets" from fifty to one hundred, annually, while the cow is impregnated but once in the year. The escutcheons of the progeny of a cow with good escutcheon will be much improved if the cow is coupled with a bull well marked, and particularly if his escutcheon is the same as that of the cow. Better have the two of different breeds, but of similar or good escutcheons, than to have the bull with inferior escutcheon.

Of course, the higher up the escutcheon extends on a bull, and the broader it is, the better it is, but we must not look for bulls to be so well marked as cows, for they never are. To distinguish the bastard bulls from the good ones, observe if there are any streaks of descending hair, and mixing so as to be bristly. This indication will be a certain one in proportion to the size of the blemish, and as that is in proportion to the whole escutcheon.

Guenon says: After having described, as I have done, all the classes of cows, and taught to recognize the bastards, I pass to the characteristic signs of the procreative bulls, which can also be divided into orders and classes; the signs are the same as for the females, but they are much more restricted and of less extent; for the reason that the tissues which enclose the generative organs in the bull are less developed than those enveloping the milk producing organs of the cow.

With the males the escutcheon commences on the inside and above the houghs, and extends as far as the middle of the posterior surface of the thigh, and ascends sometimes even to the anus of the superior orders in certain classes.

Like that of cows, the escutcheon of bulls is modified by tufts.

The bulls whose escutcheons are similar in their form and size to cows of the higher orders, possess a great ability for procreating good milk cows, those on the contrary whose escutcheons are but little developed, produce only those of poor yield.

A bull will be well marked, and a good reproducer when there is no invasion by descending hair on the ascending hair of the escutcheon; when the shape of the escutcheon is of large

dimensions in proportion to the size of the animal, and is covered with very fine hair. The bulls of which the escutcheon is small and covered with coarse hair and irregular on the sides procreate bad milk cows, which give serous milk. The skin of the scrotum should be soft and flexible, with a sparse covering of short, silky, fine hair; of golden color and oleaginous feeling; the testicles should be large and nearly uniform. All interruptions in the ascending hair of the escutcheon by encroachments of the descending hair on the right or left, in the inner part of the thigh, indicate for their get bastardy, and a degeneration of the milk production.

The yellow or nankeen color of the skin of the escutcheon is always a favorable sign.

A good procreative bull will prove fecund until ten or fifteen years of age, but it is a rare exception.

Any one may be grossly deceived if he judges only by the appearance or the shape of the prolific qualities of a bull. Experience or observation alone can show that he has maintained his early ability.

A vigorous bull, well fed, can serve one or more cows each day, but it is of great importance that he shall not commence to serve until he is fifteen or eighteen months old, otherwise he will be speedily exhausted and deformed. The improving mark of his cross and his vigor will be speedily shortened.

When the bull has attained the age of two and a half or three years, the form alters, the hind-quarters become attenuated, the front quarter becomes much enlarged, his neck enlarges and thickens, &c. About this time, whether he is castrated or whether he is "twisted," (cutting the spermatic cords) he retains always the form of the bull, and is less fit for work, and in less demand for butchering. When the operations of castration and twisting are done too late, the animal has less predisposition to fatten; his flesh is harder and tougher; he is, however, in appearance, in the same conditions of age, of quality, and of nourishment, as those castrated earlier.

Often bulls, whose character is docile and gentle, become wild and furious when they are used to serve. In certain regions, to tame them, they put a ring of iron in their nose; in others, where the good use of these rings is not known, they are obliged to castrate or twist them. This operation suffices, generally, to control their passion; but, if not, they are sent to the butcher.

Classification of Bulls.

There are for bulls, as for cows, ten classes or families; each class sub-divided into several orders, and each order comprises three grades, high, medium, and low.

I only describe, in each class, three orders. If one wishes to

proceed in the application with more rigor, he will follow the sub-divisions of the classification of the cows. I will designate the three orders of each class by the denominations of good, medium, and bad.

The signs indicating the qualities which render the bull likely to beget good milk cows are placed, like those of the female, on the posterior parts. They start from the bag, and rise up to the anus, covering, also, the genital parts, and the scrotum.

With bulls, the escutcheons start from the anterior part of the bag, extending inside, and above the houghs, spreading on the thighs; from there, the lines curved straight, or angular, according to the class, join to the right or the left under the anus.

The escutcheon, in all its extent, should be marked by the fineness of the hair and the skin; by the color, more or less yellow of the epidermis; and by the particles of dandruff which can be detached.

The characteristic secondary signs of the females will also be found in the males. Bulls, like cows, have four and, sometimes, six false teats, which are found in front of the scrotum, in the direction of the navel. These teats are small and rudimentary. Starting from the bag, one notices to the right and the left of the belly two veins resembling the two milk veins of cows. They are prolonged to and pass a little beyond the navel, and terminate in a small cavity.

Independent of the characteristic signs indicated above, the bull reproducers should unite all the essential conditions which in each locality constitute the type of the pure race. These conditions are:

1. The color preferred in that country.
2. A size proportioned to the breed that they are to continue. A shape and a frame usually accepted.
3. To be of the first order in each class, showing the power of transmitting milking qualities.
4. Aptitude for fattening.
5. To be good for work.
6. To have a docile and gentle disposition.

The evils of conformation, like the good qualities, are transmitted generally by heredity. If one does not bear this in mind, there will be little improvement.

Improvement of the bovine race has been much neglected in all these respects. A judicious choice, and a scrupulous attention is not always prevalent in selecting a breeding animal; thus it results in a fatal degeneration, to which it is time to put a stop.

Before giving the distinctive characteristics of the ten classes of bulls, it will be useful to mention those classes which are

oftener met in French and foreign races; and also those which are more rare.

The classes which are most distributed, and which present the greatest number of bulls, are in all breeds these three classes: 1. The Curveline; 2. The Limousine; 3. The Horizontal.

The classes on the contrary, which present but a very small number of subjects, are in the following order:

- | | |
|----------------|--------------------|
| 4. Demijohn. | 8. Left Flanders. |
| 5. Bicorné. | 9. Double Selvage. |
| 6. Square-cut. | 10. Flanders. |
| 7. Selvage. | |

The reason one finds so few good breeding bulls belonging to the first class, is, first, the small number of such animals compared to that of cows; and, next, the lack of knowledge of the best ones to keep. Oftentimes for want of this knowledge, the best bulls were castrated for oxen or for fattening, thus, by chance, the poorest are often kept.

The best individuals have generally at birth, all the qualities which characterize a superior animal. They are easily kept and fattened, for the reason that their mother has much milk, and are soon ready for the butcher. Inferior animals, on account of a smaller supply of milk, are thin, and often malicious, of little value, and remain oftener in the hands of the owner. Thus are sacrificed the good bulls, and the bad are kept. Therefore, always select the choicest when they are young, to improve the race.

It will thus be seen, Guenon divided his bulls into three classes: The good, the mediocre, and the bad. He also divided them into three sizes: The high, the medium, and the low. But he makes no difference between the three sizes of bulls in his description of the escutcheon. He describes each one of the three principal orders, leaving to the practitioner to determine the intermediate degrees between the good and the mediocre, and between the mediocre and the bad.

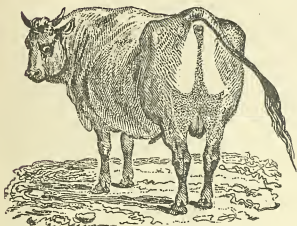
We do not repeat his descriptions, as they are based upon those of the cows of the same classes, and the engravings tell the whole story. We reproduce the engravings of the good and mediocre. But very occasionally is one of the "rare" ones observed, but he says the Curveline is the most usual, then the Limousine, and, lastly, the Horizontal. What we give is quite sufficient for all practical purposes. We advise all to carefully select their breeding animal, which will, in most cases, be from among the above three classes; and in no instance to use a bull without a good escutcheon, for from nothing, nothing comes; and no breeder can expect to improve the escutcheons upon his calves unless a bull with a good escutcheon

is used to improve that of the mother. He should also be an animal of fine quality of skin and hair, with four large rudimentary teats, and where possible with full milk veins, so-called; of good size and conformation; vigor and masculine appearance; of kind disposition; and of large milking inheritance.

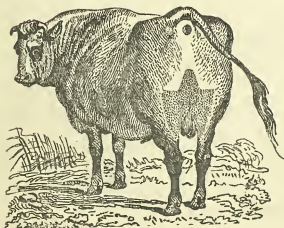
In our journeys through the country, either lecturing or acting as judge at the fairs, we have often had shown to us ovals on the inside of the thighs of bulls; sometimes but one, sometimes one on each thigh; and our opinion has been asked about it. Guenon speaks of this but once; describing the second order of Flandrine bulls, he says: "On the inside of the thigh, about the middle of that part of the escutcheon, to the right, is seen an oval, of descending hair over an inch wide and over two inches long. This denotes inferiority in the progeny, especially if the oval is large, and covered with long thick hair. Generally, when this tuft is found on one thigh or both, the animal should be rated one or more orders lower, according to the size of the tuft." In this matter I would not state it quite as strongly as Guenon does, for fear of misinterpretation being made. I see no reason why his rules applied to bulls that govern cows, should not also be applied as regards these ovals, which are more to be compared to those on the udder, than to those on the buttocks alongside the vulva. Those that I have seen were on excellent bulls, and were small in size and with short fine hair upon them. If they were large and badly shaped, with much hair, and coarse, then I should value them very much less, in fact should fear they might be put upon the bull's calves in a bad manner. There is another point about them, I have seen them upon fat bulls, and have thought they were produced by rubbing together of the buttocks. They must be judged with great care.

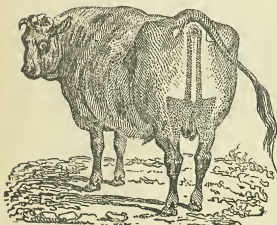
Class I.—Flanders Bull.*Class II.—Left Flanders Bull.*

Class III.—Selvage Bulls.

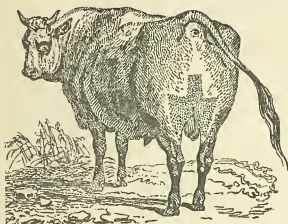


Class IV.—Curveline Bulls.

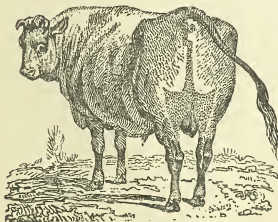


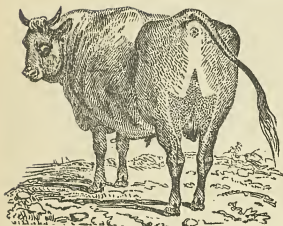
Class V.—Bicorn Bulls.*Class VI.—Double Selvage Bulls.*

Class VII.—Demijohn Bulls.



Class VIII.—Square Bulls.



Class IX.—Limousine Bulls.

REPORT OF THE PENNSYLVANIA GUENON COMMISSION.

At the annual meeting of the Pennsylvania State Board of Agriculture held January 2, 1878, it was

"*Resolved*, That the president of the Board (His Excellency Governor John F. Hartranft) be authorized and requested to appoint a commission of experts, who shall inquire into and report upon the reliability of the Guenon or escutcheon theory for selecting milking stock; said report to be made to the Secretary of the Board on or before the 1st of November next."

In accordance with this request, His Excellency Governor Hartranft issued the following commission:

COMMONWEALTH OF PENNSYLVANIA,
EXECUTIVE CHAMBER, HARRISBURG, *April 24, 1878.*
To GEORGE BLIGHT, Esq., of the city of Philadelphia; CHALKLEY HARVEY, Esq., of the county of Delaware, and WILLIS P. HAZARD, Esq., of the county of Chester:

GENTLEMEN: I have the honor to inform you that you have been duly appointed a committee by the State Board of Agriculture to investigate and test "The Guenon Milk Escutcheon Theory," and report the result thereof to the Secretary of said Board.

JOHN F. HARTRANFT,
Governor and President of the Board.

November 1, 1878.

To the Honorable JOHN F. HARTRANFT,
Governor and President of the Board of Agriculture:

YOUR EXCELLENCY: In compliance with the commission tendered us, we beg leave most respectfully to report that we have visited a number of herds and have examined two hundred cows, the result of which is herewith submitted.

Having performed to the best of our ability the duty assigned us, we beg leave to be discharged from further consideration of the question.

Respectfully yours,

GEORGE BLIGHT, *Philadelphia,*
CHALKLEY HARVEY, *Chad's Ford,*
WILLIS P. HAZARD, *West Chester.*

The Pennsylvania Guenon Commission having been appointed "to investigate and test the Guenon or Milk Escutcheon theory, and report the result thereof," respectfully report that they have examined two hundred cows, heifers, and bulls, and the result of their examinations has been to convince themselves and others of the merits of the system, and of its exceeding value to the practical farmer; they believe that if generally followed for twenty years, the value of the neat cattle of the State would be increased vastly, the amount of milk and butter produced would be much larger, and the quality of both articles better, while the quality of the meat would be improved. Having believed in and practiced the system for many years, they would add that their recent extended and careful examinations and contact with a number of owners of all grades of stock, has tended to confirm them more thoroughly in their belief. As an adjunct to previous knowledge to assist purchasers or breeders of cattle in getting or raising the best, and weeding out the poorest, they think it is worthy of being acquired by every farmer. And they would recommend their fellow farmers not to be dismayed at the apparent difficulties to be surmounted in obtaining a knowledge of the system, as it is only absolutely necessary to acquire a knowledge of the first four orders of each class, and a few other points, to practically apply it, as all animals below those grades are not worthy of being kept. Any intelligent man can readily master the system, and soon become proficient in it by practice. This knowledge, applied with the tests heretofore usually used, will enable any one to become a good judge of cattle.

The manner of making up their account of each animal is to examine the escutcheon and the udder, from which they place her in the class and order nearest to those delineated by Guenon, and then estimate the quantity, quality, and time that she will milk. These estimates must be, of course, only *approximate*, as they are based upon the indications of the escutcheon, the size of the cow, and her probable condition. As it is readily seen that where estimates are based upon what the cow should do *within three months of her being fresh*, it would be impossible to always grade the exact value of all the cows in a herd, each of which is at a different period of gestation, or in a different condition or state of health, and where also the cow is affected by the way in which she is fed and cared for, by the season, by the state of the temperature, and other circumstances. The estimates are based upon what the commission thinks the cow would do when all the conditions are favorable to her development, and where she is properly fed and cared for. A record is made by the commission on the spot. An account of the qualities of each head is drawn up by the owner. Each is made at separate times, and without the knowledge of

the other party. Then the two accounts are copied off into parallel columns for comparison. If the accounts agree in seventy-five per cent. out of one hundred, it certainly must be presumed the system has sufficient value to make it worthy of adoption by all farmers and breeders. As every farmer knows the yield is much influenced by the feed, the care, the exposure, and the treatment of the cows; therefore, a certain amount of allowance must be made, for these various things will so alter matters, that no one can tell to a quart, or a pound of butter, or to the week in time of milking. In fact, every farmer knows neither the owner himself, nor his man, can tell to a quart how much his cow or cows actually give, unless a daily record is kept every day of every year. For even if he does keep such a record, he will find the various circumstances named above affecting the quantities in his record. Therefore the earnest seeker after truth, comparing the statements made in the two columns, must not expect the two to tally without some variations. The true spirit with which he must examine these statements, will suggest itself in the question: Is this a system by which I can judge of the value and quantities of a cow correctly? Is this a system that will tell me the points of a cow, good or bad, more correctly than by any other method? Let the candid inquirer weigh these statements, and think if he knows of any method by which he can go into a herd and surely pick out the best cows, and leave the poor ones to those who judge not by this system. Every farmer has his own mode of judging, but take the shrewdest and most practiced, can he avoid often the bastards? What the commission find they can do, is that in a large majority of the percentage of cases, they will give a good estimate of the qualities of any animal. Their opinions of the time a cow will go, is based upon what they think should be the treatment of all cows, viz: That every cow should have a rest of from four to six weeks, at least.

The Commission at Barney's Farm.

The members of the Guenon commission, visited the farm of John B. Barney, on the 9th of May, 1878, and examined twelve cows, mostly Grade Durhams, Grade Jerseys, and farm stock, and they were uniformly successful in judging of said stock, with some difference of opinion on two of them.

"I was present at the examination of twelve cows of my herd, and think the committee were so uniformly successful in judging of the merits of the different cows, with such slight variations of opinion between us, as to increase my belief in the Guenon system being of great advantage to the farmers in selecting stock.

JOHN B. BARNEY.
Chad's Ford, Chester county."

May 16, 1878.

The Commission at Sharpless' Farm.

The commission visited the fine farm and herd of Jersey cows of Samuel J. Sharpless, at Street Road station, West Chester railroad, May 10.

SAMUEL J. SHARPLESS' HERD OF JERSEYS, AS REPORTED BY E. J. DURNALL, HERDSMAN FOR S. J. S., May 10, 1878.

No. 1.—Seven years.
Quantity, about 12 quarts a day.
Quality, medium.
Milks about 10 months.

No. 2.—Thirteen years.
Quantity, best. Gives 24 quarts 3 months after calving.
Quality, second rate. Has made 11½ pounds in a week.
Milks full up to the time, except when she had twin calves.

No. 3.—Eleven years.
Quantity, medium.
Quality, best.
Would go to her time.

No. 4.—Eight years.
Quantity, medium.
Quality, good; makes about 10 pounds.
Up to her time.

No. 5.—Imported. Eleven years.
Quantity about 17 to 18 quarts a day.
Quality, best; makes 11 pounds per week.
Up to her time.

No. 6.—Ten years.
Quantity, second rate.
Quality, medium.
About two months short of her time.

No. 7.—Two years old. Had only first calf.
Quantity, medium.
Quality, good.

Not fairly tested for time.

No. 8.—Four years.
Quantity, medium.
Quality, first class.
Up to calving.

No. 9.—From Niobe Third. Three years.
Quantity, first rate.
Quality, first rate.
Up to her time.

No. 10.—Imported. Four years. Had first calf at Centennial, in October, and made in seven days, 9 pounds 10 ounces.
Quantity, about 16 quarts.
Quality, excellent.
Up to time. Has been milking two years.

No. 11.—Ten years.
Quantity, second highest of herd; best.

SAMUEL J. SHARPLESS' HERD AS REPORTED UPON BY GUENON COMMISSION OF THE STATE, May 10, 1878.

No. 1.—Curveline cow, second order.
Quantity, if 14 quarts, doing well.
Quality, good.
Will milk ten months out of twelve.

No. 2.—Flanders cow, third order.
Quantity, 16 quarts first three months.
Quality, third rate.

Dry two months.

No. 3.—Flanders cow, third order.
Quantity, 12 quarts; three months.
Quality, very good and rich.
Dry six weeks.

No. 4.—Flanders cow, second order.
Quantity, 14 quarts.
Quality, very fine.

Well up to her time.
No. 5.—Selvage cow, first order.
Quantity, best; about 18 quarts.
Quality, no question.

Milks up to her time.
No. 6.—Flanders cow, first order.
Superior milker.
Quality, second class.
Milks up to her time; say six weeks.

No. 7.—Curveline cow, second order.
Quantity, medium.
Quality, too young for quality; say good.

Time, too young for test.
No. 8.—Selvage cow, second order.
Quantity, medium.
Quality, good.
Up to her time; say six weeks.

No. 9.—Flanders cow, second order.
Quantity, first class.
Quality, first class.
Well up to her time.

No. 10.—Decided to pass her, not in condition to be judged.

No. 11.—Horizontal cow.
Quantity, first-class.

- | | |
|---|-------------------------------------|
| Quality, second class. Makes about 10 pounds.
Full up to her time. | Quality, inferior. |
| No. 12.—Four years.
Quantity, second rate. | Milk up to eight months. |
| Quality, second rate; about 7 pounds. | No. 12.—Flanders cow, third order. |
| Milks to three months of her time. | Quantity, light. |
| No. 13.—Six years. | Quality, third class. |
| Quantity, number one. | Three months short of her time. |
| Quality, number one. | No. 13.—Flanders cow, second order. |
| Full up to time. | Quantity, second class. |
| At seven months from calf gives 16 quarts. | Quality, first class. |
| No. 14.—Five years. | Up to her time. |
| Quantity, promises fair. | No. 14.—Flanders cow, first order. |
| Quality, good. | Quantity, good. |
| No. 15.—Four years. Of Niobe stock, the poorest. | Quality, fair. |
| Quantity, third rate; 6 quarts. | Within a month of her time. |
| Quality, good; second rate. | No. 15.—Flanders cow, second order. |
| Up to her time. | Quantity, about 12 quarts. |
| Dropped her calf. | Quality, not very fine. |
| No. 16.—Quantity, number one. | Out of order, had aborted. |
| Quality, number one. | No. 16.—Selvage cow, first order |
| Up to her time. | First class every way. |
| No. 17.—First calf. | No. 17.—Flanders cow, second order. |
| Quantity, number one. | Quantity and quality fair. |
| Quality, number one. | |

The commission and Mr. Durnall agree as to the best cow, selected from the first six on this list—on the one side by the marks, and on the other from his knowledge.

"Having compared the annexed account of the qualities of the seventeen cows of my herd, examined by the State Guenon Commission, with the originals of the accounts as given by both parties at separate times, and taken down upon the spot, I believe it to be a true and faithful transcript of the original record of the examination.

SAMUEL J. SHARPLESS."

PHILADELPHIA, May 20, 1878.

"I was present at the examination of Mr. Sharpless' herd of Jerseys, made on the 10th of May by the State Guenon Commission, and having examined the accounts of the herd given by me, as hereto annexed, with the original entries of those given by me, and also the accounts of the commission, with the original written opinions, do certify that the annexed are faithful transcripts of the records made by each party at separate times, and that the statements were unknown to each other.

E. J. DURNALL,
Herdsmen for Samuel J. Sharpless."

LENAPE FARM, May 20, 1878.

The Commission at Strode's Farm.

The members of the Guenon Commission visited the dairy farm of Marshall Strode & Son, who have a large butter factory, and are celebrated for their first-class butter, and they examined seventeen head of grade dairy stock, and, according to the testimony of Mr. Strode, who accompanied them in their examination, were successful in judging according to the Guenon system, fifteen cows out of seventeen examined.

"Having been present when the members of the Guenon Commission examined seventeen of our herd, and having witnessed the accuracy with which they determined the quality of the stock inspected, we bear testimony to the fact that their judgment was correct, according to our experience with the cows, in fifteen cases out of seventeen, and even in these two they were partially successful. And we are more confirmed in our previous belief in the value of the system, as we never buy a cow for a good one that is not well marked. We run a dairy of seventy-one cows.

Yours truly,

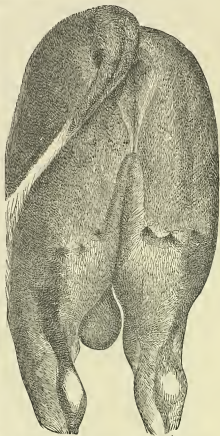
MARSHALL STRODE & SONS."

EAST BRADFORD, May 15, 1878.

Examination of Thomas M. Harvey's Stock of Jerseys and Guernseys, May 11, 1878.*

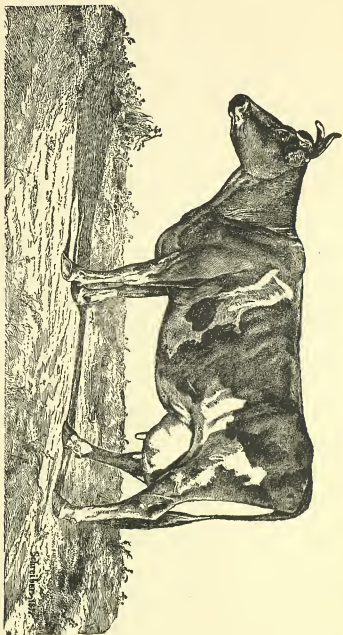
This herd is one of the finest in the State. The cows are kept in good condition, and, being well fed, the yield is very large per head. Their product is first-class butter, and should bring the highest price in the market.

The commission examined, in addition to the twenty-five cows on this list, Mr. Harvey's Guernsey imported bull "Sir Champion," which is thoroughly well marked; perhaps, the best marked bull in the country. The value of his get is, therefore, very decided. It shows most conclusively the importance of a bull from good milking stock, and that he should have a good escutcheon. The importance of a good sire to stamp his qualities upon his descendants was conclusively proved by Mr. Harvey's younger stock. The commission examined a young bull of seven months age, which was as perfectly and beautifully marked as his sire, and as

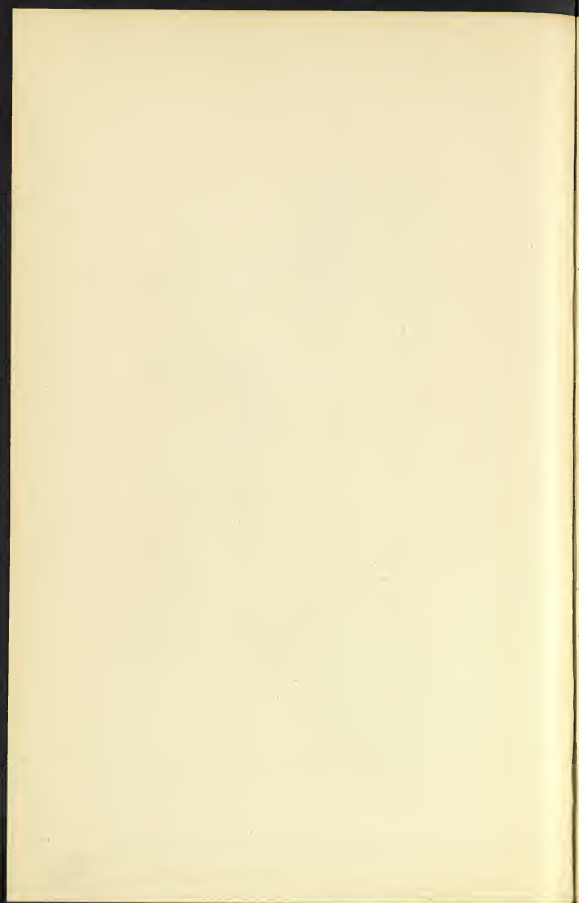


Escutcheon of Imported Guernsey Bull
"Sir Champion."

* In this examination two cows which had already been examined and reported upon by the commission were, without their knowledge, afterwards brought up for another examination, in which their opinion as recorded, agreed almost exactly with the one previously recorded, thus affording a strong proof of the value of the system. See reports of No. 1, Betsy, and Nos. 4 and 20, Beauty. (Secretary of Board of Agriculture.)



JERSEY COW, NIOBE, H. R. 97.
FIRST PRIZE AT THE CENTENNIAL, 1876.



nearly the same shape escutcheon as his sire's as could possibly be.

Nos. 9 $\frac{1}{2}$ and 9 $\frac{3}{4}$ prove also the gain to a herd from a well marked bull. These were yearlings of Champion's get. No. 9 $\frac{1}{2}$ was a great improvement upon the mother, No. 9, Carrie, of this list.

In the statements of the commission as to quantity, they have not mentioned the number of quarts, as the amounts given by most of this herd are superior to the generality, even of Guernseys; and, owing to good selection and careful handling by their owner, the commission judge that the number of quarts would be larger than usual.

STOCK OF THOMAS M. HARVEY.
THOMAS M. HARVEY'S STATEMENT.

No. 1.—BETSEY.

Quality, medium.
Quantity, 17 quarts.
Never dry.

No. 2.—NANCY.

Quality, first rate.
Quantity, 16 quarts.
Will milk up to calving.

No. 3.—CLAUDE.

Quality, first rate.
Quantity, at first, 18 quarts; but at six months, 8 quarts.
Not inclined to go dry altogether.

No. 4.—WORTH'S BEAUTY.

Quality, first rate.
Quantity, 20 quarts.
Almost impossible to dry off.

No. 5.—ZILLA.

Quality, medium.*
Quantity, 18 quarts.
Never dry.

No. 6.—CHERRY.

Quality, good.
Quantity, 24 quarts.
Will milk on.

No. 7.—ECHO.

Quality, medium.
Quantity, 20 quarts.
Does not go dry.

No. 8.—MINNA.—Guernsey.

Quality, first rate.
Quantity, 17 quarts.
Not inclined to dry.

No. 9.—CARRIE.

Quality, first rate.

STOCK OF THOMAS M. HARVEY.
OPINION OF THE GUENON COMMISSION.

No. 1.—BETSEY.—Jersey. Curve-line, No. 1.

Quality, first rate.
Quantity, first rate.
Time of milking; up to her time.
Second examination confirmed.

No. 2.—NANCY.—Guernsey. Flinders No. 2.

Quality, first rate.
Quantity, first rate.
Six weeks.

No. 3.—CLAUDE.—Guernsey. Curve-line, 3d.

Quality, first class for rich milk.
Quantity, not large.
Dry three months.

No. 4.—WORTH'S BEAUTY. Curve-line, 1st.

Quality, first class.
Quantity, large.
Close to time.
Re-examined—See report No. 20.

No. 5.—ZILLA.—Guernsey grade. Imperfect Selvage of low order. Irregularly marked.

Will milk well for few months only.
A good shaped cow.

No. 6.—CHERRY.—Half Jersey.

Good milk.
Milks profusely, and keeps herself thin on account of it.

No. 7.—ECHO.—Grade Jersey. Selvage, 2d.

Quality, medium.
Quantity, medium.
Milks up pretty well.

No. 8.—MINNA.—Guernsey. Curve-line, 2d.

Quality, good.
Quantity, good milker until within two months of calving.

No. 9.—CARRIE.—Strangely and imperfectly marked.

Quality, good.

- Quantity, 10 quarts.
Will go dry two months.
No. 10.—GENTLE.—Jersey.
- Quality, first rate.
Quantity, 20 quarts.
Dry two months.
No. 11.—MARY.—Grade, Durham.
- Quality, medium.
Quantity, 18 quarts.
Dry two months.
No. 12.—EUGENIE.—Jersey.
- Quality, medium.*
Quantity, 18 quarts.
Does not dry.
No. 13.—VICTORIA.—Guernsey.
- Quality, medium.*
Quantity, 20 quarts.
No drying.
No. 14.—JENNIE.
Quality, good.
Quantity, 20 quarts.
One month dry.
No. 15.—MAGGIE, 2d.—Young.
- Quality, medium.*
Quantity, 10 quarts.
Dry two months.
No. 16.—ROCKET.
- Quality, medium.
Quantity, 15, 20, to 25 quarts; variable.
Dry three months.
No. 17.—AMY.
- Quality, good.*
Quantity, 14 quarts.
Ten weeks dry.
No. 18.—COMLY.
- Quality, first rate.
Quantity, 15 quarts.
Dry two months.
No. 19.—KITTY.
- Quality, first rate.
Quantity, 16 quarts.
Dry six weeks.
No. 20.—BEAUTY.
- Second examination.
See No. 4.
No. 21.—ROSETTA.—Guernsey, imported.
Quality, first rate.*
Quantity, 18 quarts.
Does not go dry.
No. 22.—DUCHESS.—Guernsey.
- Quality, first rate.
- Quantity, poor.
Dry up soon.
No. 10.—GENTLE.—Jersey. Selvage, 1.
- Quality, first rate.
Quantity, large.
Dry six weeks.
No. 11.—MARY.—Grade, Durham. Flanders, 1.
- Quality, first class.
Quantity, good.
Dry six weeks.
No. 12.—EUGENIE.—Jersey. Curve-line, 2d.
- Quality, first rate.
Quantity, large.
Dry two months.
No. 13.—VICTORIA.—Guernsey. Selvage.
- Quality, medium.
Quantity, good while she milks.
Dry two months.
No. 14.—JENNIE. Ordinary stock.
- Quality, not very rich, but good.
Quantity, good.
Dry two months.
No. 15.—MAGGIE, 2d.—Guernsey. Flanders, 3d.
- Quality, very good.
Quantity, medium and continuous.
Dry two months.
No. 16.—ROCKET.—Grade Jersey. Curve-line, 2d.
- Quality, rich.
Quantity, good.
Dry two months.
No. 17.—AMY.—Kentucky Short-Horn.
- Quality, medium.
Quantity, poor.
Dry three months.
No. 18.—COMLY.—Guernsey. Selvage, 3d.
- Quality, first rate.
Quantity, good and continuous.
Dry six weeks.
No. 19.—KITTY.—Guernsey and Jersey grade. Bicorn, 2d.
- Quality, first class.
Quantity, first rate.
Milks well up.
No. 20.—BEAUTY.—Guernsey. Curve-line, 1st.
- Quality, first class.
Quantity, first class. Milks well up.
This is the second examination.
See No. 4.
No. 21.—ROSETTA.—Guernsey, imported. Flanders.
- Quality, excellent.
Quantity, fair milker.
Dry two months.
No. 22.—DUCHESS.—Guernsey, imported. Curve-line, 2d.
- Quality, medium.

Quantity, 20 quarts. Don't go dry.	Quantity, large. Dry two months.
No. 23.—BRIDGET.—Guernsey grade.	No. 23.—BRIDGET.—Guernsey grade.
Quality, first rate.	Selvaige, 4th.
Quantity, 14 to 18 quarts.	Quality, good.
Fails when pregnant. Does not dry altogether.	Quantity, poor.
No. 24.—FANCY.—Guernsey.	Dry three months or ten weeks.
Quality, medium.	No. 24.—FANCY.—Guernsey. Selvaige.
Quantity, 16 quarts, and fails fast.	Quality, medium.
Dry three months.	Quantity, poor.
No. 25.—DAFFY.—Grade, Durham.	Dry two months.
Quality, medium.	No. 25.—DAFFY.—Grade, Durham.
Quantity, 22 quarts.	Flanders, 1st.
Does not dry.	Quality, good.
	Quantity, about 24 quarts.
	Milks her full time.

* In the above account will be noticed a few with the mark * which Mr. Harvey said indicates that the amount of milk given and the quality was largely increased by extra feeding.

"I was present at the examination of our herd of Guernseys, Jerseys, and grades, by the Guenon Commission, on the eleventh of fifth month, 1878, and I have examined their report and compared it with the originals written on the spot, (the contents of which were before now unknown to me,) and I testify to the annexed report being an accurate copy of the opinions recorded by them at the time of examination. The statements made by me were handed to members of the commission on twenty-first instant, and are as nearly accurate as my own knowledge, and that of the persons who had the immediate care of the herd, and an interest in the proceeds of the dairy, could make them.

THOS. M. HARVEY."

WEST GROVE, 27th of 5th month, 1878.

Examination of William M. Large's Herd, Chestnut Grove, Doylestown, Bucks County.

The commission, as represented by George Blight and Willis P. Hazard, visited the beautiful farm of William M. Large, on the afternoon of May 31—on a very rainy, unpleasant day, and making the examination of stock a very difficult duty. The stock is a valuable one of thoroughbred and grade Short-Horns, and is well fed and otherwise well cared for.

WM. M. LARGE'S ACCOUNT OF HIS HERD.

No. 1.—VICTORIA.

Quantity, 18 quarts.
Never tried her on butter but once, then made 10½ pounds.
Goes dry two months to ten weeks.

No. 2.—JOSEPHINE.

The Doylestown Agricultural Society offered a premium of \$25 for the cow that yielded the most butter; and also \$25 for the cow that gave the most milk. The largest yield for a single week 16 pounds 3 ounces. Was tried five times during the year, two months apart; taking the average of the five consecutive trials, would make a trifle over 500 pounds. Awarded the first

OPINIONS OF THE STATE GUENON COMMISSION.

No. 1.—VICTORIA.—Short-Horn.

Flanders, first order.
Quantity, about 18 quarts.
Quality, good.

Up to her time—say one month.

No. 2.—JOSEPHINE.—Thoroughbred Short-Horn. Flanders, second order.

premium for butter, and second for milk.

Lost the record of pounds of milk.
Dry about one month.

No. 3.—FANNY FERN.

Quantity, 19 quarts.
Quality, never tried her butter production.

Goes dry five or six weeks.

No. 4.—LETTIE.

Quantity, 9 quarts.
Quality, never tried her butter qualities, but her milk is rich and good.

Goes dry about three months.

No. 5.—NORAH.

Quantity, fresh, gives 17 quarts; holds to it well.
Quality, has made 10 pounds butter in a week.

Goes dry about two months.

No. 6.—LUCY.

Quantity, 13 quarts.
Quality, a less number of pounds will make a pound of butter than most of my other cows; think her milk extra good.

Dry some two months.

No. 7.—BERNICE.

Quantity, when fresh, about 12 quarts.
Quality, never tried her butter production.

Goes dry some three months, and has the credit of being the poorest cow in the herd.

No. 8.—JOSEPHINE 2d.—First calf.

Quantity, first calf, 11 quarts.
Quality, never weighed her milk or tried her butter production.
Cannot tell how long she will go dry.

No. 9.—JUDITH.

Quantity, 17 quarts.
Quality, on a trial after her first calf was taken away, made 2 ounces less than 8 pounds of butter, done up in lumps for market.
Goes dry six or seven weeks.

Quality, very good.
Quantity, 18 quarts.
About one month dry.

No. 3.—FANNY FERN.—Flanders, first order.

Quantity, 20 quarts.
Quality, first rate.

About up to time, (one month).

No. 4.—LETTIE.—Selvage, fifth order.

Quantity, 8 quarts.
Quality, second rate.

Dry four months.

No. 5.—NORAH.—Flanders, imperfect.

Quantity, 18 quarts.

Quality, good.

Dry three months.

No. 6.—LUCY.—Flanders, fourth.

Quantity, 14 quarts.
Quality, good, very.

Dry three months.

No. 7.—BERNICE.—Flanders, second.

Quantity, 12 quarts.

Quality, good.

Time, eight months out of twelve.

No. 8.—JOSEPHINE 2d.—Curveline, third.

Quantity, 10 to 12 quarts.
Quality, rich.

Goes to two months of her time.

No. 9.—JUDITH.—Flanders, first.

Quantity, 18 quarts.
Quality, good.

Well up to her time (one month or six weeks).

"Having been present at the examination of my herd of Short-Horns, by the State Guenon Commission, May 31, 1878, I certify this report is a correct copy of the original records made on the spot, and at separate times; neither party having knowledge of the other's accounts.

WILLIAM M. LARGE."

CHESTNUT GROVE, 7th month 3d, 1878.

Report of the Examination of the Stock of Eastburn Reeder, of Rabbit Run Stock Farm, New Hope, Bucks County, Pa.

The commission visited the farm of Eastburn Reeder on Saturday, June 1, and examined his stock of Jersey and Guernsey

breeds in presence of the proprietor and a number of members of the Solebury Farmers' Club. Mr. Reeder's account of his herd had been drawn up and placed in the hands of J. S. Williams, Esquire, Secretary of the Solebury Farmers' Club, some ten days before the visit of the commission, and is printed herewith.

The commission was represented by George Blight and Willis P. Hazard, and part of the time by Captain J. C. Morris, of Susquehanna county, at the request of Thomas J. Edge, Secretary of the State Board.

Mr. Reeder, not having made in his report any statements of the quality of the milk, except as regards the yield in butter, has sent the commission the following condensed statement of what each cow gave on May 20 :

No. 1, Belle,	10 quarts.	No. 7, Florentia,	10 quarts.
No. 2, Topsy,	14 "	No. 8, Paunacussing,	8 "
No. 3, Firefly,	12 "	No. 9, Lady Delaware, . . .	6 "
No. 4, Isabelle,	8 "		
No. 5, Marian,	14 "	Total for nine cows, 94	"
No. 6, Urania,	12 "		

Yield of the herd, May 20,	94 quarts.	Butter in seven days, . . .	67 pounds.
Yield of the herd in seven		Quantity of milk to one	
days,	658 "	pound of butter, . . .	9 $\frac{3}{4}$ qts.

This statement of the number of quarts required to make a pound of butter from Jersey and Guernsey stock, it will be seen, carries out the conclusions of the commission, who estimated the quality of this herd, as well fed and not too long milked stock of these breeds should give a pound of butter to every nine quarts of milk.

"Having been present at the examination of my herd by the State Guenon Commission, on Saturday, June 1, 1878, and having since examined their report by the original record made on the spot by them, and compared it with my account of the herd, handed to Mr. J. S. Williams, May 21, or more than one week before they made the examination, I do certify that the accompanying report is correct and true.

EASTBURN REEDER,
New Hope, Bucks county, Pa."

RABBIT RUN FARM, June 15, 1878.

"I certify that Eastburn Reeder handed me his account of his herd ten days before the examination was made by the State Guenon Commission ; that I was present with others at the examination ; that the two reports were compared in the presence of a number, shortly after the examination, and were generally satisfactory ; and that I have now examined the accompanying reports by the two original records, made at separate times as above mentioned, and have found them correct and true copies of said original records.

J. S. WILLIAMS,
Secretary of the Solebury Farmers' Club."

June 15, 1878.

Examination of Eastburn Reeder's Herd.

ACCOUNTS OF THE HERD BY EASTBURN REEDER.

No. 1.—BELL.—Age, 12 years. Grade, Alderney. Calved November 10, 1877.

Greatest yield when fresh, 16 quarts per day. Yield May 20, 1878, 10 quarts per day. Butter, 8 pounds in seven days.

Tried February, 1875.

Milks to one month of calving.

No. 2.—TOPSY.—Age, 10 years.

Guernsey. Calved March 9, 1878.

Greatest yield when fresh, 18 quarts.

Yield May 20, 1878, 14 quarts.

Made 12 pounds in seven days.

Tried June, 1872.

Goes dry three months before calving.

No. 3.—FIREFLY, (1133.)—Age, 8 years. Jersey. Calved October 28, 1877.

Greatest yield when fresh, 14 quarts. Yield May 20, 1878, 12 quarts. Averaged 6 pounds butter for forty weeks, from September 1, 1872, to June 8, 1878. Greatest yield of butter in any one week since, 10½ pounds.

Never goes dry; has been milked regularly since August 27, 1872.

No. 4.—ISABELLE, (1365.)—Age, 6 years. Jersey. Calved September 19, 1877.

Greatest yield when fresh, 12 quarts. Yield May 20, 1878, 8 quarts. Made 9 pounds butter in seven days.

Tried October, 1877.

Milks to one month of calving.

No. 5.—MARIAN.—Age, 6 years. Guernsey. Calved February 15, 1878.

Greatest yield when fresh, 14 quarts. Yield May 20, 14 quarts.

Butter never been tested.

Milks to within one month of calving.

No. 6.—URANIA, (2793.)—Age, 5 years. Jersey. Calved January 30, 1878.

Greatest yield when fresh, 12 quarts. Yield May 20, 12 quarts.

Butter never been tested.

Milks to one month of calving.

No. 7.—FLORENTIA, (3518.)—Age, 4 years. Jersey. Calved January 1, 1878.

Greatest yield, 10 quarts. Yield May 20, 10 quarts.

Butter never been tested.

Milks to one month of calving.

OPINIONS OF THE HERD BY THE GUENON COMMISSION.

No. 1.—BELL.—Grade, Alderney. Flanders, 2d.

Quantity, 18 to 20 quarts.

Quality, fair.

Dry three to four months.

No. 2.—TOPSY.—Guernsey. Curve-line, 2d.

Quantity, 16 to 18 quarts.

Quality, first rate.

Dry two months.

No. 3.—FIREFLY.—Jersey thoroughbred. Demijohn, 2d. Daughter of Niobe, 3d.

Quantity, 12 to 14 quarts.

Quality, medium.

Dry two months.

No. 4.—ISABELLE.—Jersey thoroughbred. Flanders, 3d.

Quantity, 16 quarts.

Quality, first rate.

Dry one month.

No. 5.—MARIAN.—Guernsey. Curve-line, 3d.

Quantity, 16 quarts.

Quality, first rate.

Dry two months to three months.

No. 6.—URANIA.—Jersey thoroughbred. Selvage, 2d.

Quantity, 14 quarts.

Quality, second rate.

Dry one month.

No. 7.—FLORENTIA.—Jersey thoroughbred. Curve-line, 2d.

Quantity, 12 quarts.

Quality, second rate.

Dry one month.

No. 8.—PAUNACUSSING, (5050.)—Age, 2 years. Jersey. Calved October 30, 1877.

Yield May 21, 1878, 8 quarts.

Duration yet to be ascertained.

No. 9.—LADY DELAWARE, (5051.)—Age, 2 years. Thoroughbred Jersey. Calved January 3, 1878.

Yield May 21, 1878, 6 quarts.

Duration yet to be ascertained.

No. 8.—PAUNACUSSING.—Jersey thoroughbred. Selvage, 2d.

Quantity, 12 quarts.

Quality, medium.

Dry two months, probably.

No. 9.—LADY DELAWARE.—Jersey thoroughbred. Flanders, 3d.

Quantity, only milks out of two teats.

Quality, medium.

Dry three months, probably.

Examination of Moses Eastburn's Cow, Beauty.

ACCOUNT OF MOSES EASTBURN.

Cow, BEAUTY.—Age, 9 years. Calved March 20, 1878.

Greatest yield of milk per day about 17 or 18 quarts. Yield May 24, 1878, 16 quarts.

Quality of milk, 9 quarts to make a pound of butter. Butter made in eight and a half months, 302½ pounds.

Duration of yield of milk, ten months.

OPINIONS OF THE COMMISSION.

BEAUTY.—Jersey. Curveline, 2d.

Quantity, 18 quarts.

Quality, first class.

Time, well up to her time.

"This is to certify that I was present at the examination of my cow, Beauty, this first of sixth month, 1878, by the committee to test the Guenon system, and find their report to correspond with the within statement.

MOSES EASTBURN."

SOLEBURY, BUCKS COUNTY.

Examination of Colonel James Young's Herd, at Middletown.

The commission visited the large farms of Colonel James Young, near Middletown, and examined thirty-seven head of cows and heifers, among which were some of the finest Jersey cows in the State. His whole stock is well fed and cared for, and are in fine condition. He supplies Middletown with the best of milk. Colonel Young does not keep a record of the performances of his cows, and the commission were therefore obliged to examine the cows, and after making their record, to compare it, item by item of each cow separately, with the knowledge of them had by his very intelligent dairy-woman, who has charge of the cows and the milk, and knows their characters as milk and butter producers well; also has a record of the times of calving of all the cows. The estimates of the commission agreed with hers, on all the hundred and eleven points, except nine points, and where they differed, that difference was in two cases on the quality, and in the other cases on the time. The commission attribute their unanimity on this herd, to the careful selection and breeding of Colonel Young, to his good feeding, and the excellent care that the animals have. These points constantly looked after, maintain the excellence of the herd, and as a consequence the escutcheons cor-

respond, for, as the Colonel says, "he never saw a good escutcheon without being on a good animal, and never saw a good animal without a good escutcheon."

MIDDLETOWN, November 1, 1878.

"We were present when the commission visited our farms, and examined the stock, and we think they judged rightly of it, in nearly every case—we should say within five per cent. of being entirely correct.

We have examined the account to be printed with the original record, and find it to be correct and corresponding.

JAMES YOUNG,
JAMES S. YOUNG."

Examination of the Herd of William Calder, Esq., Harrisburg.

The commission visited one of the farms of William Calder, near Harrisburg. This gentleman has seven farms, containing nine hundred acres, and keeps a variety of stock. On the farm visited, near the reservoir, the commission examined eight head of grade stock, in very good order, on good September pasturage. The dairyman, a very intelligent man, had no record of the exact quantity and quality of the stock, but, as he milked them himself, a knowledge of their general qualities; and upon hearing the decision of the commission upon each cow, assented to the character given of all of them, except on two points; on one as to yield, and on another as to time. It was pleasing to notice the surprise and delight expressed by him at the exhibition, by entire strangers to the herd, of such accurate knowledge of them as the system showed it could give. And he determined to acquire it forthwith.

The commission saw a very fine black grade cow, with the calf by her side a perfect specimen of the Belted stock, though sired by a thoroughbred Jersey bull—to be accounted for only by the fact that the cow had been served by a Belted bull the third time before this one.

Examination of Several Herds near West Grove, Blanketed and Unblanketed, under the Supervision of a Committee of the Experimental Farm Club.

It had been stated by some that the commission used the ordinary means of judging of the value of cows, in addition to the Guenon tests. This was, of course, entirely denied by the commission; and as it was repeated in the public print, the commission, to settle the matter in the minds of candid men, offered to have any number of cows blanketed, so that only their posteriors could be seen, and then judge of their escutcheons, provided a committee should be present at the examination, view it closely, and give a report. Thus pressed, the challenge was accepted, and there was appointed a committee of five of some of the best farmers and dairymen residing near the Experimental farm. It was also understood that any could attend who wished to, and on the day of the examination three

of the committee were present, as well as a number of other farmers. The commission examined the first five in the stable, blanketed, then two unblanketed, then two blanketed, and the remaining four unblanketed. The report of this committee is appended herewith. The cows were examined on a farm of Thomas Gawthrop, near West Grove. Afterward a number of cows were examined on several farms in the neighborhood, in the presence of the committee. No longer time was required to form an opinion on the blanketed cows than on the others, and the comparative results can be judged from the accompanying tables.

The commission examined seven cows blanketed, and would have examined more, but the committee said it was useless, as they could see, and had full faith that only the escutcheon was considered by the commission. The committee's report will be found annexed, thus setting to rest the charge that the commission were examining by any other than the Guenon test.

THOMAS GAWTHROP'S ACCOUNT OF
COWS EXAMINED AT THOMAS
GAWTHROP'S FARM, SEPTEMBER
20.

- No. 1.—VICTORIA.—Grade, Jersey
and Durham.
Quantity, first.
Quality, first.
A first class butter cow, and milks
well up to time.
- No. 2.—CECIL.—Grade, Jersey.
Quantity, first.
Quality, first. First class for butter.
Milks up to time.
- No. 3.—NELLIE.
Quantity, second.
Quality, second.
Dry from ten to twelve weeks.
- No. 4.—LUCY.—Recently purchased.
Yields three months from calving
13 quarts.
Quality, first.
- No. 5.—LILY.—Grade, Jersey.

Quantity, second.
Quality, first.
Milks up to time.
- No. 6.—BEAUTY.—Jersey.

Yields 14 quarts per day.
Quality, first.
Milks to within eight weeks of
calving.
- No. 7.—DARBY.—Jersey.

Quantity, 14 quarts per day.
Quality, first.
Almost impossible to turn dry,
though never excelling in quan-
tity.

THE GUENON COMMISSION'S AC-
COUNT OF COWS EXAMINED AT
THOMAS GAWTHROP'S FARM, SEP-
TEMBER 20.

- No. 1.—VICTORIA.*—Grade, Jersey
and Durham. Eight years.
Quantity, first.
Quality, first.
Up to her time.
- No. 2.—CECIL.*
Quantity, first.
Quality, first.
Short eight weeks.
- No. 3.—NELLIE.*—Demijohn, 1.
Quantity, second.
Quality, first.
Short eight weeks.
- No. 4.—LUCY.*—Flanders, 2d.
Quantity, second.

Quality, first.
Up to her time.
- No. 5.—LILY.*—Grade, Jersey. Flan-
ders, 2d.
Quantity, second.
Quality, first.
Dry four to six weeks.
- No. 6.—BEAUTY.—Jersey. Five years
old.
Quantity, third.
Quality, second.
Dry two months.
- No. 7.—DARBY.—Jersey. Flanders,
2d.
Quantity, second.
Quality, first.
Dry four weeks.

No. 8.—STAR.—Grade, three-quarter Jersey.

Yield with first calf from 12 to 14 quarts per day, and milks well up to time.

Quality, first class.

No. 9.—NORAH.

Quantity, first.

Quality, first.

Dry from eight to ten weeks.

No. 10.—SALLIE.†

Quantity, second.

Quality, second.

Goes dry eight weeks.

No. 11.—DIDO.†—Grade.

Quantity, 20 quarts.

Second in quality.

Dry from eight to twelve weeks.

No. 12.—MOLLY.‡

Yields about 16 quarts per day.

Second class quality.

Dry from eight to twelve weeks.

No. 13.—WHITEFACE.‡

Second class in quantity, 15 quarts per day.

Second quality.

Dry about ten weeks.

No. 3.—STAR.†—Grade, three-quarter Jersey. Flanders, 3d.

Quantity, second.

Quality, first.

Dry six weeks.

Her Jersey blood helps to overcome some blemishes on her escutcheon.

No. 9.—NORAH.†—Grade.

Quantity, first.

Quality, first.

Up to her time.

No. 10.—SALLIE.—Grade. Twelve years. Flanders, 2d.

Quantity, second.

Quality, second.

Up to her time.

No. 11.—DIDO.—Grade. Left Flanders.

Quantity, first.

Quality, second.

Dry three months.

No. 12.—MOLLY.—Imperfect Flanders.

Quantity, second.

Quality, second.

Dry ten weeks.

No. 13.—WHITEFACE.—Grade.

Curveline, 3d.

Quantity, third.

Quality, second.

Dry ten weeks.

* These five cows were so blanketed, as to show only the escutcheon.

† These cows were also blanketed.

‡ The last four animals were not blanketed, but were driven up and examined by the commission without any apparent reference to any marks, except the escutcheon. T. G.

MARK HUGHES' ACCOUNT OF HIS COWS, SEPTEMBER 20.

No. 1.—LACTE.

Do not know the quantity of milk and butter per week, but gives very rich milk, and milks up to calving.

No. 2.—LAURA.

Quantity, 24 quarts milk per day. Quality, 16 pounds butter per week. Has never been dry; begins to increase in milk about three weeks before calving, and cannot be turned dry.

No. 3.—TOPSY.

Quantity, 20 quarts milk per day. Quality, makes 13 pounds butter per week.

Will milk up to calving.

COMMISSION'S ACCOUNT OF MARK HUGHES' COWS.

No. 1.—LACTE.—Jersey thoroughbred. Flanders, 2d.

Quantity and quality, first rate.

Milks close to calving.

No. 2.—LAURA.—Jersey thoroughbred. Demijohn, 1st.

Quantity, first rate.

Quality, first class.

Milks up to calving.

No. 3.—TOPSY.—Grade, Jersey. Ten years. Curveline, 1st.

Quantity and quality, first rate.

Milks up to calving.

HOWARD PRESTON'S ACCOUNT OF
HIS COWS.

No. 1.—Grade Durham.

Quantity, second.
Quality, second.
Milks up to her time.

No. 2.—Grade Durham.

Quantity, second.
Quality, second.
Dry ten weeks.

No. 3.—Common stock.

Quantity, second.
Quality, second.
Dry eight to ten weeks.

No. 4.—Grade Durham.

Quantity, third.
Quality, second.
Dry ten weeks.

No. 5.—Common stock.

Quantity, second.
Quality, second.
Dry three months.

No. 6.—Grade Durham.

Quantity, second.
Quality, second.
Dry eight weeks.

No. 7.—Grade Durham.

Quantity, second.
Quality, third.
Dry ten weeks.

No. 8.—NELLY.—Grade Jersey.

Quantity, second.
Quality, second.
Dry eight weeks.

No. 9.—JESSIE.—Grade Jersey.

Quantity, second.
Quality, second.
Milks up to time.

No. 10.—POLLY.—Grade Jersey.

Quantity, first.
Quality, first.
Milks up to her time.

No. 11.—LILY.—Common stock.

Quantity, first.
Quality, first.
Dry eight weeks.

No. 12.—BLUSH.—Grade Jersey.

Quantity, first.
Quality, first.
Dry six weeks.

No. 13.—TOPSY.—Grade Jersey.

Quantity, second.
Quality, second.
Dry three months.

No. 14.—BONNIE.—Common stock.

GUENON COMMISSION'S ACCOUNT OF
HOWARD PRESTON'S COWS, SEP-
TEMBER 20.No. 1.—Flanders, 2d.—Grade Dur-
ham.

Quantity, second.
Quality, second.
Up to time.

No. 2.—Left Flanders.—Grade Dur-
ham.

Quantity, second.
Quality, second.
Dry two months.

No. 3.—Grade stock.—Imperfect
Flanders.

Quantity, third.
Quality, second.
Dry eight weeks.

No. 4.—Grade Durham.—Selvage, 2d.

Quantity, second.
Quality, second.
Dry ten weeks.

No. 5.—Native stock.—Flanders, 3d.

Quantity, second.
Quality, third.
Dry three months.

No. 6.—Grade Durham.—Flanders, 3d.

Quantity, third.
Quality, third.
Dry six to eight weeks.

No. 7.—Grade Durham.—Bicorn, 3d.

Quantity, third.
Quality, second.
Time, eight weeks.

No. 8.—NELLY.—Grade Jersey. Left
Flanders.

Quantity, second.
Quality, second.
Time, eight weeks.

No. 9.—JESSIE.—Grade Jersey.—Sel-
vage.

Quantity, second.
Quality, first.
Up to time.

No. 10.—POLLY.—Grade Jersey.—
Flanders, 2d.

Quantity, second.
Quality, second.
Up to time.

No. 11.—LILY.—Native stock.—Flan-
ders, 2d.

Quantity, first.
Quality, first.
Dry four to six weeks.

No. 12.—BLUSH.—Grade Jersey.
Curveline, 2d.

Quantity, second.
Quality, second.
Dry six weeks.

No. 13.—TOPSY.—Imperfect Curve-
line.—Grade Jersey.

Quantity, third.
Quality, second.
Dry three months.

No. 14.—BONNIE.—Flanders, 1st.—
Native stock.

Quantity, first.
Quality, first.
Milks up to her time.
No. 15.—DAISY.—Common stock.

Quantity, third.
Quality, second.
Dry three months or more.
No. 16.—KATIE.—Common stock.

Quantity, third.
Quality, second.
Dry six weeks.

Quantity, first.
Quality, second.
Up to her time.

No. 15.—DAISY.—Flanders, 3d. Native stock.

Quantity, third.
Quality, second.
Dry six weeks.

No. 16.—KATIE.—Flanders, 2d. Native stock.

Quantity, second.
Quality, second.
Dry four to six weeks.

JOSEPH PYLE'S STATEMENT OF HIS COWS.

No. 1.—FAWN.

Quantity, 10 to 15 quarts.
Quality, very rich milk.
Dry from four to six weeks.

No. 2.—FANCY.

Quantity, 16 to 18 quarts.

Quality, milk very good quality.
Falls off sooner than most cows,
and will go dry eight weeks.

GUENON COMMISSION'S ACCOUNT OF JOSEPH PYLE'S COWS.

No. 1.—RED GRADE COW.—eight years.—Flanders, 2.

Quantity, 14 to 15 quarts.
Quality, second.
Dry about ten weeks.

No. 2.—FANCY.—Guernsey. Flanders, 3.

Quantity, 18 quarts when fresh, and will begin to reduce and stop two months short of her time.

Quality, first.
Will go two months dry.

This cow had been previously examined, May 11, at Thomas M. Harvey's farm. Mr. Harvey had since sold her to Mr. Pyle. The following are the two statements at that time :

T. M. HARVEY.

Quality, medium.
Quantity, 16 quarts and falls fast.
Dry three months.

GUENON COMMISSION.

Quality, medium.
Quantity, poor.
Dry two months.

COMMISSION'S ACCOUNT OF MILTON E. CONRAD'S COWS.

No. 1.—LILY.—Grade Guernsey. Bicorn, 1.

Quantity, about 20 quarts.
Quality, first.
Milks up to her time.

No. 2.—FLOYD.—Flanders, 1.

Quantity, 18 quarts.
Quality, very good.
Milks up to her time.

This is a very correct description of my cows, Lily and Floyd.

M. E. CONRAD.

The above examination of our herds of cows, some of which were covered by a large blanket, completely excluding from view every part of the animal except the escutcheon and back part of udder, subjected the commission to the severest test that could be applied; and agreeing, as their estimate of quality and quantity does, with our previously written reports, leads us to think that in the hands of experts it would be a valuable aid in judging the quality of dairy stock.

THOMAS GAWTHROP,
EVERARD CONRAD,
HOWARD PRESTON,
MARK HUGHES,
Committee.

WEST GROVE, 11th month 7, 1878.

The undersigned having been present at the examination of Thomas Gawthrop's herd of dairy cows, by the Guenon Commission, on the 2d day of 9th month, 1878, am free to say that, although most of the cows were blanketed from horns to tail, their estimate, in a great majority of them, very nearly corresponded with the owner's account previously prepared.

M. E. CONARD.

WEST GROVE, 11th month 7, 1878.

Joseph Pyle would have signed had he been present at the examination. Expresses confidence in the system.

T. G.

Examination of J. & J. Darlington's Cows, October 2.

The commission visited the herds of Messrs. J. & J. Darlington, October 2, at Darlington station, on West Chester road, Delaware county. These gentlemen make the finest butter and get the largest price in the market. Their dairy is admirably arranged. They have farms of four hundred and eighty acres, and have a herd of one hundred and sixty-seven cows. They had selected about a fair sample of the herd in two lots of cows. The first lot, from No. 9 to 33, was on one farm, and those numbered from 1 to 14 on the other farm. These gentlemen kept no test of the quality of any cow's milk, and have no exact record of the quantity given by any cow; but as they are experienced dairymen, and thoroughly practical men, they knew about what each cow was giving in milk, and about its general quality, and sufficient to pronounce the grade of each cow, whether first, second, or third class. Therefore, in their record they do not give the exact record, as the committee would have desired, so as to compare with their own estimates, but they give the general qualities of the cow, and the two records must be compared from that standpoint. Another matter must be taken into consideration. The Messrs. Darlington are liberal feeders, which accounts partly for their rich, tasty butter, and tends to make their cows do full work. A standard of quarts for first, second, and third class, upon which to estimate the qualities of the cows, was agreed upon between the commission and Messrs. Darlington.

J. & J. DARLINGTON'S ACCOUNT.

No. 9.—

Quantity, first.
First class cow.
Time, six to eight weeks.

No. 61.—

Quantity, second.
Second class cow.
Time, six to eight weeks.

No. 4.—

Quantity, third.
Third class cow.
Time, four to six weeks.

No. 1.—

GUENON COMMISSION'S ACCOUNT.

No. 9.—Grade Durham.—Bicorn, second.

Quantity, second.
Quality, second.
Time, four to six weeks.

No. 61.—Grade Durham.—Imperfect Flanders, third.

Quantity, second class.
Quality, second class.
Time, two months.

No. 4.—Grade Durham.—Flanders, third.

Quantity, third.
Quality, second.
Dry one month.

No. 1.—Grade Durham.—Flanders, second.

- Quantity, first.
First class cow.
Time, four to six weeks.
- No. 41.—
Quantity, first.
First class cow.
Time, four to six weeks.
- No. 22.—
Quantity, first.
First class cow.
Time, four to six weeks.
- No. 6.—
Quantity, third.
Third class cow.
Time, six to eight weeks.
- No. 7.—
Quantity, second.
Second class cow.
Time, eight to ten weeks.
- No. 67.—
Quantity, first.
First class cow.
Time, four to six weeks.
- No. 19.—
Quantity, third.
Third class cow.
Time, two to three weeks.
- No. 32.—
Quantity, third.
Third class cow.
Time, two to three weeks.
- No. 1.—
Agrees with the commission.
Second class cow.
Dry about two months.
- No. 3.—
Agrees with the commission.
First class cow.
Dry four to six weeks.
- No. 2.—
Second class cow.
Dry about six weeks.
- No. 4.—
Agrees with committee.
Second class cow.
Large milker, but fails too soon.
Dry from six to eight weeks.
- No. 5.—
Large milker.
First class.
Dry six to eight weeks.
- No. 6.—
Agrees with committee.
Second class.
Dry three to four weeks.
- No. 7.—
First class in every respect.
Best in the herd.
- Quantity, second.
Quality, second.
Up to her time.
- No. 41.—Grade Durham.—Flanders.
Quantity, first.
Quality, second.
Time, six weeks to two months.
- No. 22.—Grade Durham.—Flanders,
second.
Quantity, first.
Quality, first.
Up to time, say four to six weeks.
- No. 6.—Grade Durham.—Imperfect
Flanders.
Quantity, third.
Quality, second.
Dry eight to ten weeks.
- No. 7.—Grade.—Flanders, with bas-
tard marks.
Quantity, second.
Quality, second.
Up to her time, six weeks.
Re-examined, and shows bastard
marks.
- No. 67.—Grade Durham.—Imperfect
Flanders.
Quantity, first.
Quality, second.
Dry eight weeks.
- No. 19.—Grade.—Selvage, third.
Quantity, third.
Quality, second.
Dry eight weeks.
- No. 32.—Durham.—Flanders, third,
partly bastard.
Quantity, second.
Quality, second.
Dry eight weeks.
- No. 1.—Grade.—Flanders, third.
Quantity, second.
Quality, second.
Dry two months.
- No. 2.—Grade.—Flanders, second.
Quantity, first.
Quality, first.
Dry four to six weeks.
- No. 3.—Grade.—Imperfect Flanders.
Quantity, first.
Quality, first.
Dry six weeks.
- No. 4.—Grade.—Flanders, second.
Quantity, second.
Quality, second.
Dry six to eight weeks.
- No. 5.—Grade, Durham.
Quantity, second.
Quality, second.
Dry eight to ten weeks.
- No. 6.—Grade.—Horizontal, first.
Quantity, second.
Quality, second.
Dry four to six weeks.
- No. 7.—Grade.—Curveline, second.
Quantity, second.
Quality, third.

Dry four to eight weeks.
No. 8.—

Agrees with committee.
Good second class.
Dry four to six weeks.

No. 9.—
First class.

Dry four to six weeks.
No. 10.—
Agrees with commission.
Second class.
Dry six to eight weeks.
No. 11.—

First class.

Dry about eight weeks.
No. 12.—
Agrees with commission.
First class.
Dry six to eight weeks.
No. 13.—

Agrees with commission.
Third class.

Dry four to six weeks.
No. 14.—
Agrees with commission.
First class.
Dry two to three weeks.

Dry four to six weeks.
No. 5.—Grade, Durham.—Horizontal,
first.

Quantity, second.
Quality, second.
Dry four to six weeks.

No. 6.—Grade.—Flanders a Gauche.
Quantity, second.
Quality, second.
Dry six weeks.

No. 10.—Grade.—Flanders, second.
Quantity, second.
Quality, second.
Dry six weeks.

No. 11.—Grade.—Double Selvage.—
Some bastard marks
Quantity, second.
Quality, second.

Dry ten to twelve weeks.
No. 12.—Grade.—Imperfect Flanders.
Quantity, first.
Quality, second.
Dry six weeks.

No. 13.—Grade, Durham.—Flanders,
third.
Quantity, third.
Quality, third.

Dry six to eight weeks.
No. 14.—Grade.—Flanders, second.
Quantity, first.
Quality, second.
Up to her time.

We were present at the examination of our stock by the Pennsylvania Guenon Commission, on October 2, and have examined the accounts here rendered, with the original written opinions, and find them to correspond. The accounts were given by both parties without either knowing anything of the accounts of the other.

(Signed) J. & J. DARLINGTON.

Having given the results of their work, the commission would now leave the further solution of the problem to the practical dairymen of the State. They, of course, expect that not only their report, but also the correctness of the system, will be criticised; but if this criticism is conducted with a spirit of fairness, and with a view to obtain the truth, they fully believe the result will be favorable.

By direction of the commission.

WILLIS P. HAZARD,
Secretary.

OPINIONS OF THE SYSTEM.

In the *Country Gentleman* of July 17, 1879, S. Hoxie, of Whitestown, New York, so thoroughly expresses our experience and convictions, that we are led to quote it :

"The writer has been acquainted with 'the escutcheon theory' ever since about 1850. During this time he has been a practical dairyman in central New York. At first he approached the study of the escutcheon as a doubter. It seemed to him an absolute absurdity to claim a connection between the growing of the hair and the production of milk, two functions so entirely different.

"At first he examined the herd of cows which he helped milk every night and morning, and was surprised to meet with so many proofs of the truth of the theory. He then observed it upon other herds, and finally extended his observations to various breeds under various circumstances. He was at last compelled to come to the final conclusion that the theory, in the main, was true, but that other points and conditions of the animal must be understood in order invariably to reach a correct judgment :

"1. The breed modifies the quantity and quality of milk production. This is so manifestly true that it needs no argument. A particular order and class of escutcheon indicates a different quantity and a different quality of milk on a Jersey than it indicates on an Ayrshire cow.

"2. The condition of care and feed to which different families of the same breed have been accustomed during long periods modify milk production, and must be taken into consideration. For instance, certain families of Short-Horns have been cared for and fed through several generations with the sole view of beef production; other families have been trained to milk production. Escutcheons upon the former indicate far less quantity of milk than upon the latter. Thus some families with very fine escutcheons give very little milk. The escutcheons in such cases no doubt indicate an original capacity that a few generations of proper treatment might awaken and develop.

"3. The capacity and health of the digestive organs modifies the quantity, and we also think the quality, of milk production. Cows with large, healthy digestive organs will eat and properly digest more food, and give good return at the pail, than one with opposite conditions of the digestive organs. The former may sometimes give the larger quantity of milk, though, indeed, possessed of the poorer escutcheon.

"4. The activity of the nervous system materially affects milk production. This is often seen when the animal is unduly excited. The quiet dispositioned cow that attends to feeding, and is not disturbed by any excitement in the herd or in the surrounding fields, may have the poorer escutcheon, yet give

larger quantities of milk than the extremely excitable cow, with the better escutcheon.

"Other conditions will suggest themselves to the observing and reflecting man, that materially affect the quantity and quality of milk production.

"These modifying conditions do not disturb the true theory of the escutcheon. *Other things being equal, the escutcheon is indicative of the quantity and quality of milk.* Many are misled in estimating the value of the escutcheon, because they have not the patience or the capacity to observe the varying conditions. The escutcheon is of immense practical value. It is easily seen the conditions of flesh do not change it, and animals of all ages, above three months, may be examined by it, and their milking qualities determined with a good degree of accuracy. Other things being equal, the animal with the better escutcheon will invariably make the butter maker. During nearly thirty years of observation, the writer never observed a first-class cow that had a poor escutcheon. The escutcheon must be of great value to those who are breeding, and endeavoring to improve thoroughbred cattle of the various milking breeds. It offers a test that may be applied before milking age, and it may be applied to males as well as females. *Though the pedigree is ever so long, and though it contains many good ancestors, the animal should be rejected from the breeding herd, unless it has a good escutcheon.*"

"One of the Farmers," a regular correspondent of the *American Agriculturist*, writes in the number for November, 1878:

"THE VALUE OF THE GUENON MILK MIRROR.—Taken with a good udder and milk-veins, good digestive functions, and capacity for food, good health and thrift, the Guenon milk mirror is a valuable indication of both the quantity and duration of the flow of milk. This seems to be demonstrated by the experience of thousands who have given the subject careful study, and I have never yet met the man who ridiculed it, and called it "folly," who was able intelligently even to outline the prominent types. The number of calves which do well or ill as milkers, very nearly as indicated by their milk mirrors, is so large, that one of the principal practical uses to which a knowledge of the Guenon system can be applied is in selecting calves to raise, and, of course, to those who buy cows, it comes equally well in use."

THE AMERICAN ASSOCIATION OF BREEDERS OF DUTCH FRIESIAN CATTLE, composed of some of the most practical and intelligent farmers of the dairy region of central New York, have adopted a new set of rules for entry into registry in their Herd Book, wisely making the performance at the pail one of the necessary requirements. Thus, for a period of not more than twelve

months from date of calving, the cow under $2\frac{1}{2}$ years of age must give 6,000 pounds of milk; over $2\frac{1}{2}$, and under $3\frac{1}{2}$, 7,000 pounds; over $3\frac{1}{2}$, and under $4\frac{1}{2}$, 8,000 pounds; over $4\frac{1}{2}$, 9,000 pounds; also, rule 8: No animal shall be admitted to registry unless of the "milk form," or of the "combined milk and beef form," of medium or of large size, without coarseness, and if a female, having a well developed escutcheon, not below the 4th order of the 1st class, the 3d order of the 2d, 3d, 4th, 5th, 6th, 7th and 8th classes, the 2d order of the 9th class, or the 1st order of the 10th class of the Pennsylvania Commission. With such a record, and with such marks, no one need take the trouble to see the stock, but may safely order it, knowing exactly what they are to receive.

George E. Waring, junior, says:

"If the escutcheon teaches anything it teaches *the duration of the flow of milk*. This is its great value in connection with the Jerseys—a race of small, rich, and *persistent* milkers. It does indicate quantity, it is true, but not Dutch quantity, nor Ayrshire quantity; only *Jersey* quantity, which is quite another affair. It indicates, in at least equal degree, the continuance of the flow of milk. Indeed, this is the great value of Guenon's discovery. It is easy to judge of the *present* flow of milk in the case of any given cow, but, so far as I know, there is nothing but the escutcheon to tell us how long she will continue to milk after getting with calf. If she has a *first class* escutcheon, I think we are safe in believing that she will hold out well in her milking. If she has a very defective escutcheon, we may depend on her to fall away very rapidly when a few months gone, and to shut down entirely three or four months before calving."

From an exhaustive and admirable treatise on the Ayrshire breed, by John D. W. French, of North Andover, Mass., we make the following extracts from his remarks on the Guenon system:

"Pabst, a German farmer of large experience, with a view to simplify the method of Guenon, and render it of greater practical value, made five divisions, or classes:

1. Very good, or extraordinary.
2. Good, or good middling.
3. Middling, and little below middling.
4. Small.
5. Very bad milkers.

"Magne, the French writer, made a still further simplification, by making four classes instead of five:

1. The very good.
2. The good.
3. The medium.
4. The bad.

"In the first class he places cows, both parts of whose milk-mirror, the mammary and the perinean, are large, continuous, uniform, covering at least a great part of the perineum, the udder, the inner surface of the thighs, and extending more or less out upon the legs with no interruptions, or, if any, small ones, oval in form, and situated on the posterior face of the udder. Cows of this class are very rare. They give, even when small in size, from ten to fourteen quarts per day, and the largest size from eighteen to twenty-six quarts a day, and even more. They continue in milk for a long period.

"The second class is that of good cows, and to this belong the best commonly found in the market. They have the mammary part of the milk-mirror well developed, but the perinean part contracted or wholly wanting. Small cows of this class give from seven to ten or eleven quarts a day, and the largest from thirteen to seventeen quarts.

"The third class consists of middling cows. When the milk-mirror really presents only the lower or mammary part slightly developed or indented, and the perinean part contracted, narrow and irregular, the cows are middling. Cows of this class, according to size, give from three or four to ten quarts per day.

"The fourth class is composed of bad cows. No veins are to be seen either on the perineum or the udder, while those of the belly are very slightly developed, and the mirrors are ordinarily small. These cows give only a few quarts of milk a day, and dry up a short time after calving.

"Mr. C. L. Flint, in his work on 'Milch Cows,' says :

"These classifications, adopted by Pabst, Magne, and others, appear to be far more simple and satisfactory than the more complicated classification of Guenon. Without pretending to judge with accuracy of the quantity, the quality, or the duration which a particular size or form of the mirror will indicate, they give to Guenon the full credit of his important discovery, as a new and valuable element in forming our judgment of the milking qualities of a cow, and simply assert, with respect to the duration of the flow of milk, that the mirror that indicates the greatest quantity will also indicate the longest duration.

"My own attention was called to Guenon's method of judging cows some eight or ten years ago, and since that time I have examined many hundreds, with a view to ascertain the correctness of its main features, inquiring, at the same time, after the views and opinions of the best breeders and judges of stock, with regard to their experience and judgment of its merits; and the result of my observations has been that cows with the most perfectly developed milk-mirrors or escutcheons are, with rare exceptions, the best milkers of their breed, and that cows with small and slightly developed mirrors are, in the majority of cases, bad milkers.

"I say the best milkers of *their breed*, for I do not believe that precisely the same sized and formed milk-mirrors on a Hereford, or a Devon and an Ayrshire, or a native, will indicate anything like the same or equal milking properties. It will not do, in my opinion, to disregard the general and well known characteristics of the breed, and rely wholly on the milk-mirror; but I think it may be safely said that, as a general rule, the best marked Hereford will turn out to be the best milker among the Herefords, all of which are poor milkers; the best marked Devon, the best among the Devons; and the best marked Ayrshire, the best among the Ayrshires; that is, it will not do to compare two animals of entirely distinct breeds by the

milk-mirrors alone, without regard to the fixed habits and education, so to speak, of the breed or family to which they belong."

"In my own herd of Ayrshire cows, the largest milkers have the best escutcheons, and these cows have, in most cases, transmitted these marks to their descendants. On the other hand, the cows with medium or poor escutcheons have rarely transmitted to their calves better ones; but, generally, of the same or lower class than the dams."

"BULLS.—Guenon's second and hardly less important discovery was that the bull had the same marks as the cow, only somewhat shorter and narrower. "Guenon bestows upon these marks the same name, 'milk mirror,' which may be justified, in as far as the bull has greater influence upon the sustaining or obtaining of an abundant yield of milk, as well as the improvement of the breed."

"SOME TESTIMONY.—Mr. L. A. Hansen, of Bay St. Louis, writes, in a letter to the *Country Gentleman* :

"I served my apprenticeship for three years on a dairy farm with two hundred cows, performing all the labor appertaining to a farm, the same as one of the hired men. After this, for twenty years, I had dairies of from eighty to one hundred and seventy cows. Living in the best dairy country then known, and our butter commanding the very highest market prices in London, England, (taking the premium at a butter exhibition in London,) we considered it the best policy to buy our cows instead of raising them, and I consequently had to purchase from twenty to thirty cows every year. Having adopted the Guenon system as a helping guide in my purchases, I necessarily examined more than a hundred cows annually, besides having under daily observation my own cows and those of the neighboring dairy farms. Thus, I had continued practice through a number of years. The classifications of the professor, mentioned in my former article, were, with very rare exceptions, right. In the first two classes, they did not fail once; in the lower classes, more frequently; but as the lower classes, with their sub-division, are of no importance to the dairyman—only the two first being fit for a dairy—the study of them becomes unnecessary, and it is of little avail if they are minutely correct.

"As nothing in this world is perfect, we cannot reasonably expect the Guenon system to be without defects; but, as already stated above, the imperfection is to be looked for in that part which is immaterial for practical application. Under all circumstances, as far as my experience goes, the *Guenon theory will always remain a valuable guide in selecting milk cows.*"

"Mr. L. S. Hardin writes, in a prize essay :

"Very few, if any, modern writers upon cattle have accepted the complicated theory of Guenon, while no two of them agree as to the extent in value of the escutcheon. As a point of beauty, it should certainly be cultivated in the herd. As to its practical value for indicating the milking qualities of the cow, my experience is that a finely-developed escutcheon is rarely seen on a poor milker, while many excellent milkers have very small or no escutcheons at all. In other words, its presence is a good sign, while its absence is not necessarily a cause for distrust. Milk-veins, as an indication for milking capacity, are of about the same value as the escutcheon."

"The editor of the *Jersey Bulletin*, in commenting on this, says :

"We should be very glad to know of a cow, worthy to be called an 'excellent milker'—duration of the flow after becoming pregnant being one of the tests—which has no escutcheon at all, or a very small one. As at present

advised, we don't believe she exists. Most old cow men would say that, if the escutcheon is as valuable an indication as the milk-veins, too much effort can hardly be made to extend knowledge concerning it."

"Henry Tanner, professor of agriculture, Queen's College, Birmingham, England, says, in a volume of prize essays of the Highland and Agricultural Society:

"Some attention has also been given, within a few years, to a discovery, made by Mons. Guenon, respecting 'the escutcheon,' as it is termed. Like many other persons, he was carried beyond the boundary of discretion in his speculations, and thus his valuable observations were for a time lost in the mist with which he enveloped them. Sufficient is already known of its value, at least, to lead us to the conclusion that it is worthy of more general knowledge. * * * * *

"A very extended observation has proved that, other conditions being equal, the modification of form presented by the escutcheon will lead to an estimation, not only of the quantity of milk which the animal will produce, but also of the time during which the cow will keep up the supply of milk.

"Without going into detail upon this point, I may briefly state that the larger the extent of the escutcheon, the greater is the promise of milk, and also of its continuance, even after the cow is again in calf. A cow may have a small escutcheon, and yet be a good milker; but observation leads to the conclusion that, if she possessed a more fully developed escutcheon, she would have been a better milker. It may be considered a point of merit, not as deciding whether or not the cow is a good milker, but rather as an additional indication which may be taken into consideration in conjunction with other characteristic points. It is also desirable, in estimating the extent of the escutcheon, to make full allowance for the folds in the skin; otherwise, a large escutcheon may be taken for a small one. Besides the escutcheon, there are tufts of hair (epis) which have a certain degree of value when seen upon the udder of the cow."

"I presume there are many men who, although perhaps not caring a pin for an escutcheon, yet consider themselves fully capable of selecting a good milk cow. Now, although ignoring the escutcheon in their judgment, are they not apt, in selecting an ideal cow of any particular milk breed, to find a good escutcheon developed of one class or another?

"Perhaps it may be asked, if the Guenon system is a true one, why are not the Short-Horns a great milk breed, for in them we often find very large and perfect escutcheons?

"This question may be answered as follows: The Short-Horns were originally a good milking breed; but, having been made particularly a beef breed, the milking propensity or mammary system has in most families been changed or bred out. Notwithstanding this change, they may retain the escutcheon, not as a mark of quality, but as one of the characteristic marks of the breed.

"All farmers are aware that a first-class milk cow may, by injudicious feed and treatment, especially as regards milking, become a second-class animal. Now, such a system, carried out generation after generation, must certainly degenerate a milk breed, however good their marks and quality.

"Among the Short-Horns, probably the best milkers have good escutcheons; but an Ayrshire cow, with an inferior escutcheon, might be found to give more milk than a Short-Horn

with a superior escutcheon, simply because one breed has been bred especially for beef, the other especially for milk

"To show how breeding for a purpose through many generations may ultimately change qualities, let us compare the Short-Horns with the Dutch or Holsteins. * The early Short-Horns, or the Teeswater breed, as it was called, was of Dutch origin, or was certainly formed by crossing the native cattle of England with stock imported from Holland. This breed was originally considered remarkable for its milking qualities.

"The Dutch breed, bred for generations for the especial purpose of milk, is to-day noted for large milkers, and among the cows may be found extraordinarily developed escutcheons.

"The following extract, from a translation from the French of Magne on milk cows, is *apropos*, as showing the difference between characteristics of breeds and qualities of the animals:

"A long, fine head, narrow towards the horns, and a slender chest are given by most writers as characteristics of a good milk cow. Now, in Flemish, Danish, Dutch and Brittany cows the fineness of head and chest is a characteristic of these races, and not the indication of particularly developed milking qualities, being met with alike in the good and bad milkers of those races; whilst in some of the Swiss breeds, and especially in those of St. Gervais, nearly all the cows, whether good or indifferent, possess a large head and heavy chest. The farmers of Ariege, while showing us some remarkably good cows, drew our attention to their strength of chest, amptness of the dewlap, and the volume of the head; these characteristics of race they mistake for qualities, observing them in their best cows. On the other hand, it is to be remarked that cows with fine heads are often inferior milkers. If fineness of head were a true proof of mammary activity, would not the cows of the Durham breed be amongst the best dairy animals in the world? This characteristic cannot, therefore, be considered absolutely appreciable, as much depends on the race to which a cow may belong. It is indicative of milk only, because it is a remarkable point in those races which have produced milk cows. Thus a characteristic of race has been mistaken for a sign of particular qualities."

"If, then, we should regard the escutcheon, as well as a fine head, one of the characteristics common in the Short-Horn, it is not necessary to consider it as an indication of any particularly developed quality. Although probably the best milkers would have this sign, yet it might be regarded as a latent sign of milking qualities which had been bred out by disuse. The only fair way to judge of the value of the escutcheon in determining milking qualities, is to consider its influence in the different breeds separately, not comparing one breed with another. In judging grade cows, characteristics and blood must have a certain influence on the judgment. The general type of the animal must be considered.

"In the Ayrshire cow, we must regard the escutcheon, not as a special characteristic of the breed, but as one of the signs denoting quality.

"If the time should come when it has become so universal a sign of quality as to be considered a characteristic of the breed, then we shall have approached much nearer perfection than at present.

"Admitting that the escutcheon theory is a failure, or at least that it has failed as a test-mark of milk, have we any other mark or series of marks that have invariably given better results?"

"Magne says, that in Flanders, a cow is considered a good milker, 'especially when towards the middle of the spine the apophyses (or projections) are separated or scattered so as to leave a space between of about two finger-breadths,' for the reason that, when the spine is thus formed, the haunches are better spread, and the thighs and croup larger. The other members of the body are also better developed, the basin is ampler, and the organs placed in this cavity, as well as the udder, are more voluminous.

"Now, would our dairymen consider this a more certain indication of milk, than a good escutcheon?"

"Without regarding the escutcheon as an infallible sign of quality and quantity of milk, I believe it to be one of the best indications of milk, that nature has provided; but in the use of this system, we must consider:

1. The breed.
2. The age.
3. The feed.
4. The treatment (present and past).
5. The health.

"A good, not to say a thorough, understanding of the Guenon system, cannot be obtained by casual observation, but only by the most painstaking examination of many animals, extending over a long period of time."

Objections to the System and to the Report of the Commission.

M Guenon in his Treatise on Milk Cows, does not give any positive reasons why the escutcheon is indicative of the yield. He rested content with the fact, that he had proved it so before many learned men, and risked his reputation upon publishing the facts. The system as far as we have been able to trace it, has always been verified by those who have *thoroughly studied it, and tested it by extended practice according to the rules of Guenon*. The principal cavilers against it, either admit they have not constantly pursued it, or show by their writings their lack of sufficient knowledge of it. The report of the Pennsylvania commission has incited several to write against the system. The principal paper produced was one read before a meeting of the State Board of Agriculture, by Eastburn Reeder, and which he had reprinted in several papers. Of this essay, it is sufficient to say, he showed he had not studied nor practiced the system thoroughly, and because he could not understand it and got befogged, he quoted a large mass of scientific matter to show the system could not be true. These attempts at argument are so quietly, but completely, set aside in the

essay of Prof. D. E. Salmon, D. V. M., on Contested Dairy Questions, quoted below, that we shall not discuss them further. For we cannot any more tell *absolutely and positively* why the escutcheon reveals what it does, than we can tell why a *black* cow eating *green* grass, converts *red* blood into *white* milk, than we can tell *why* the green grass grows. In both questions at issue, we have certain facts and theories to guide our reason and judgment about them, but we know nothing *positive*, and because it is so, Mr. Reeder and Mr. Hardin won't believe it is so or can be so.

In addition to what Mons. Magne, the eminent French veterinarian, one of the most celebrated medical professors in France, has written, Professor Arnold, of Rochester, says, when indorsing what Magne writes :

"The size of the escutcheon is regarded as the measure of the quantity of blood supplied to the milk-producing vessels, and are evidence of their capability of elaborating milk. In the same way, the veins take up the blood, and carry it back in the milk veins which pass through the bag and along the belly, and enter the body through one or more holes, on their way to the heart. The size of these milk veins, and the holes where they enter the body, vary with the escutcheon, and, like it, give evidence of the quantity of venous blood passing away, from and through the udder, and they have the same significance with reference to quantity, as the supply of arterial blood and the size of the escutcheon."

Mr. Reeder also quotes the weights of cattle given by Guenon, and triumphantly exclaims, whoever saw such small cows in this country? Guenon distinctly quotes the weights, as net dead weight, or the animal deprived of its head and horns, its hide, entrails and feet, and gives the excellent reason for it, when he says: "If I had made the calculations for the animal on the hoof, the figures given by me would present a great difference, which would increase, according to the amount of fat, sometimes to double the weight." Unfortunately, Mr. Reeder did not know enough of Guenon's facts to be aware of this clear statement, and supposed the weights were live weight.

Again, he says the commission did not examine the stock correctly. *He* would have looked at an animal, decided what escutcheon it had, or "to which class and order she belongs, and then append the figures of Guenon as the result. Any other mode of proceeding is not testing the Guenon system." Here again his lack of knowledge of the system is shown; it would be exceedingly unjust to the reputation of Guenon as he distinctly declares the size, the age, the breed, the treatment, the season, the period of gestation, &c., shall be fully considered. It is the judgment of just such men passed upon the

system, which have tended to throw any doubt upon the merit of Guenon's assertions. What would be thought of the judgment of such a person, if told by a physician to administer three things to a patient, and he gave but one, and the patient died, and he excused himself by saying, "you told me to give him medicine, and I gave it."

Then Mr. Reeder denies the value of the system for pointing out the best *feeders*. The cow which gives the most butter, and which this system will readily point out, will fatten the most rapidly when dried off; for the butyraceous particles, which go to make the butter, will be diverted from the milk and turn to fat on the animal.

Mr. Reeder objects to the report of the commission, that they "in some cases failed to classify cows," and "made incorrect classifications," and "in some cases gave different results from Guenon," and lastly "the terms employed to denote quantity, quality and duration, are too vague, indefinite, and unsatisfactory." In all these objections, Mr. R., it will be readily seen by any practitioner of the system, shows his utter ignorance of the mode of applying it.

Guenon says it is sometimes impossible to properly classify an animal, owing to the effects of a cross, or some freak of nature. In such cases they may be judged according to the escutcheon it the nearest resembles. This the commission did, but of course could not classify them.

His judgment as to "incorrect classifications" we must pass by as of no account, he not being any more capable of that than the commission.

The same may be said of "giving different results from Guenon." That is entirely a matter of judgment. Guenon says, judge of the cow by various things and then the result will approximate the amount stated to each escutcheon. Mr. Reeder says the amount set down to each escutcheon is inflexible. We prefer to follow the skill of Guenon and not the ignorance of Reeder, as it was Guenon we were appointed to test.

Finally, he objects to the terms employed to denote the significance of the escutcheon. The great difficulty of the commission was to find herds of which an accurate test of each animal had been made and kept. We believe not one farmer in one hundred thousand has such a record. Yet the commission are expected by such "infallible" advocates as Mr. R. to tell the exact character of each cow, and that record is to be set down alongside of the inaccurate record of the owner; and if they vary at all, the commission are the ones at fault. The very terms Mr. R. objects to were employed by us by special agreement with the owners, because they hesitated to say how many quarts or pounds each of their cows gave. But where there were such careful farmers as W. M. Large, M. Eastburn.

J. Pyle, and M. Conard, who gave quarts, and the commission gave quarts, we would invite attention to the comparative reports as the best answer. And even in Mr. R.'s own case we ask comparison, for the reason why the commission are on most of his cows one or two quarts higher is easily accounted for, because we did not learn until after the examination that he was generally ranked by his neighbors a poor feeder, which would certainly make the difference. In the cases of such fine herds as those of S. J. Sharpless, Thomas M. Harvey, Thomas Gawthrop, and H. Preston, &c., the accounts were highly satisfactory to their owners, and confirmed them in the merits of the system. For the same reasons we object to *his* test of "the system in other herds" as any proof of the merits of Guenon, for it was his interpretation of the escutcheons that is given, and it would be very unfair to judge Guenon as interpreted by one who is not an expert.

Mr. Hardin has written much against the system, but containing very little argument, and no valid objection. We will endeavor to sift out of the mass, any points made:

He thought there should be one "non-believer" on the commission, so as to "make a fair and disinterested report." What possible use he may have been is a mystery, except to cavil at what perhaps he did not understand. The commission simply put down what they interpreted the escutcheons to indicate, and the owner stated what he knew of his stock. The two accounts were brought together and compared. What more a non-believer could have done, we are at a loss to conceive.

His process of examination was laid down thus: "To take down in writing *before you see the cows*, the owners' and milkers' opinions of all the cows to be tested." "Make the owners, and milkers, *out of hearing of each other*, tell you the name of the cow, her age, how much milk she gives when fresh, how much milk she gives a year, is her milk rich or poor; have you ever tested the milk by measure, or otherwise, to determine the amount or its richness; what breed is she? "Get a non-believer to make pencil sketches of each escutcheon." "The Governor to appoint two more on the committee who are not believers."

Now, having laid out this programme, he does not say what was to be done with it. The inference was to be drawn, we suppose, that the many escutcheons were to be engraved, and the public were to draw their conclusions from them and the reports given by the owners and milkers, and see how Guenon would stand the test. And what were the believing or non-believing commissioners to do? Supervise the taking down of all this? How, at once, this shows Mr. Hardin to know little or nothing of the system! Like Mr. Reeder, he did not know that Guenon assigns many other things to be thought of to form

a correct opinion! Was it more proof to be told by the owner all that any one could know about the cow, and then say that corresponds with the escutcheon? Or did it put the system to a severer test, to say to the owner, don't tell me a word, and then proceed to tell him all about a cow you never saw, simply from examining her escutcheon? In one case, you are assisted to define the escutcheon by the knowledge given you. In the other case, you define the cows character by only the knowledge you can get from the escutcheon. No better proof can be given of Mr. Hardin's lack of practical knowledge of the system.

Another objection he makes, and repeats several times, as being a very strong one with him, is, why did not Guenon, and why do not the commissioners, go to work and buy up all the best cows and sell them at a profit, and thus get very rich. His cry is, why don't they make plenty of money out of it, if it is so valuable? Simply, because neither of them are in that business, or care to be. But Mr. Harvey, a manager of the Delaware county almshouse, in one year from taking this position, changed the cows there, and increased the yield twofold from the same number of cows, and has bought and sold all the steers and cows on his large farm for many years solely by this system, and *has* grown wealthy.

He says in another article "feeling the modesty that naturally attaches itself to benighted ignorance," he "started out in the city in search of some one who was learned on these subjects." He found "a professor in our medical institute," "one of our most learned physicians," and they proceed together to canvass Professors Magne and Arnold's theories and facts about the formation of the escutcheon. The result of two such wise heads (or of "benighted ignorance") coming together, was that neither of them ever heard of Professor Magne, and that his dictum was "opposed to all the teachings of physiology." The learned professor knowing as much about a cow as he did of physiology. And it is such stuff as this which forms the arguments of Mr. Hardin. Professor Salmon, in his essay on Contested Dairy Questions, effectually settles these "learned" men.

We have devoted enough space to a writer, who finds it so easy to tear down, but is never able to build up, a doubting Thomas, whose only mode of judging a cow, he says is a crumple horn, a large udder, and to test the milk every Monday for one year. What an amount of money the farmers of America would lose annually if they followed his rules, and what an amount they would save by following Guenon's rules!

The following valuable essay is from the *Country Gentleman* of August 7, 1879:

Contested Dairy Questions.

By D. E. SALMON, D. V. M.

Several of our prominent dairy writers have been lately discussing the more complicated questions of their department in a very energetic and decided, if not in a scrupulously exact manner. Now, if these questions are worth the time and space necessary for their presentation at length, they are certainly of sufficient importance to receive candid and perfectly truthful treatment; and, though these writers may not have intended to give wrong impressions, their teachings can hardly be considered, in several respects, as representing the present condition of knowledge on these points.

MAGNE'S THEORY OF THE ESCUTCHEON.—In Mr. Eastburn Reeder's essay on the escutcheon—which is a valuable paper, though marred in the above respects—there is an attempt at scientific argument in order to ridicule the accepted value of the milk-mirror; and the assumed facts on which this argument is based, are presented in such a positive manner that they will probably be accepted, without further investigation, by the majority of readers unless contested at once. The writer has hesitated to do this in the hope that it would be done by some one else; but the truth is of too much consequence to allow the matter to pass entirely without notice.

The first point to which I will call attention is the attempt to dispute Magne's opinion that the hair turns in the direction in which the arteries ramify, and that the reversed hair on the udder and adjacent parts indicates the termination of the arteries which supply the udder with blood. When these arteries are large, he holds, they extend through the udder upward and onward, ramifying on the skin beyond the udder, and giving the hair the peculiar appearance which distinguishes it from the rest of the surface. If these arteries are very small, they are not likely to extend much beyond the udder, and, hence, form a small escutcheon; consequently, a small escutcheon indicates a feeble supply of blood, and little material to make milk of.

Now how is this combatted? The first argument is that "when Mr. Hardin showed this paragraph to one of the most learned medical professors at Louisville, Kentucky, he at once wanted to know who this Magne was, and declared his name unknown in the annals of medical science." What are we to think of such a statement as that? Magne—member of the French Academy of Medicine, formerly director of the Alfort Veterinary School and Professor of Lyons—unknown in the annals of medicine!

We are then asked if the arteries are not the same in all cows, and are told that we might as well expect more bones or muscles as more arteries. If Mr. Reeder will turn to Chau-

veau's Anatomy—one of the best authorities in the world—he will find, in general remarks on arteries, the following statement, which I translate, not having the English edition: "Arteries very often present variations in their deposition, which the surgeon should keep in mind. These variations ordinarily concern the number, the point of origin, and the volume of the vessels." And if he will go through the list of arteries, he will find examples given of each of these variations.

Again, he asks, "how is it that the ramification of the arterial circulation *causes* the hair to grow in one direction on one part of the cow's body, and in the opposite on other parts?" Not a very difficult question, if we admit that arteries have such an effect, for they certainly do not all ramify in the same direction.

In a revised edition of the essay, subsequently published, some important points were added. Here we are told that "the arteries supplying the udder with blood are called the *mammary* arteries, and their ramification *does not extend beyond the outer surface of the udder*. Further down the *aorta*, or main artery, another pair of arteries branches off, called the *femoral* arteries. These supply the muscles of the thigh, or what we know as the *rounds of beef*, with blood, and ramify upon the portion of the escutcheon lying between them. Still further down, another pair of arteries, called the *gluteal* arteries, leave the *aorta*, and are distributed through the pelvic region, and ramify upon the extreme upper portion of the escutcheon. Here we have at least three distinct systems of arteries ramifying upon the escutcheon, and *two* of them most certainly have no connection with the milk secretion whatever."

Without attempting to point out *all* the errors of this description, we will once more refer to Chauveau to settle the more important points. The reader will find in that work that the *femoral* arteries have a branch called the *pre-pubic*, which in turn has a branch called the *external pubic*, from which the *mammary* artery branches. It will also be found that the mammary artery "sends several divisions to the tissue of the udder, and is prolonged between the thighs by a perineal branch, which terminates in the inferior commissure of the vulva, after having furnished glandular and *cutaneous* divisions." Turning to the description of the *gluteal* arteries, we find that they ramify in the *gluteal* muscles, which are at a considerable distance from the perineum, and that nothing is said of their going to the last named part.

Here, then, is complete and positive refutation of these arguments—not by mere statements of my own, but by the words of a standard work, of world-wide reputation, on the anatomy of these animals. Magne's *facts* are correct, then, whether his inferences are or not. *The same artery that supplies the udder*

with blood supplies the skin on which the escutcheon is formed ; and, more than this, the artery ramifies in the direction in which the hair of the escutcheon grows. Is there any connection between the two for all that? Who knows? A point or two to show that such a connection is not beyond the possible may still be in place.

Erasmus Wilson, who has made a speciality of the skin and its diseases, shows that the direction of the hairs on the anterior surface of the human body is, commencing at a point near the arm-pit, downwards and slightly inwards towards the umbilicus, and that below this point the direction is upwards and inwards; so that the umbilicus "is the center of convergence of four streams," as he expresses it.

Now this disposition, complicated though it is, certainly resembles that of the arteries—the branches from the *axillary* artery passing downwards and inwards, while the *epigastric* arteries branch from the *femorals* near the groin, and have a direction upwards and inwards. On the neck, the direction of the hair is upwards and backwards; in front of the ear, it is downwards and forwards; behind the ear, it is backwards—in each case following the arterial ramifications. In addition, Tisserant and others in France, who stand high as authorities, admit that the escutcheon continues to increase in relative surface till the second or third milking—that is, till the development of the udder, and, consequently, of the vessels supplying it have reached their highest point.

In some cases, it must be confessed, the correspondence in question apparently does not exist, but rather the opposite; and as the mammary artery has substantially the same distribution with horses as with cattle, we cannot see why the former should not be as plainly marked as the latter, if the direction of the hair depends on the direction of the arteries.

But, it may be asked, in what possible manner could the one condition influence the other? It must be remembered that physiology is still a growing science, and that there are many things yet to learn, so that it is still pardonable to confess ignorance. We know, however, that the cavity in the skin surrounding the hair (hair follicle) is set in an oblique direction, as well as the hair that emerges from it; the papilla at the bottom of this cavity must also be inclined, and it is this that, in all probability, decides the direction of the hair, as the growth of this takes place by additions of cells from the surface of the papilla. Now, each papilla, or elevation, has a vascular loop, or, as some say, a minute artery and vein, and one can easily imagine how the direction of this minute artery might influence the direction of the papillary summit, and, consequently, of the hair that grows from it.

I do not say that this is the proper explanation, but I suggest

it as one way in which the correspondence might be accounted for. I do say, however, that the evidence brought to bear on this point by Mr. Reeder can have no influence in deciding the question, for the reason I have given.

Dr. Henry Stewart, the noted scientific and practical farmer and writer, said lately : " I have for some time past been studying the nature of the escutcheon physiologically and anatomically." And he has " recently discovered a still more satisfactory connection between the milking capacity of a cow and the development of the escutcheon."

" The milk-vein is an important mark of the deep-milking cow. But it is not the veins, but the arteries, which supply blood to the system, either for the production of tissue or the secretion of the milk. And yet the veins are important because they bear a direct relation to the arteries, being the return channel for the blood after it has fulfilled its functions ; and so the larger supply of blood conveyed by the arteries requiring a vein of large capacity to return it, this vein is an ultimate indication of the vigor of the circulation of the lacteal organs. The main artery which supplies these organs is the subcutaneous abdominal [what Dr. S. says is commonly called the milk-vein]. This important artery supplies a large part of the posterior portion of the system, furnishing blood to the genital organs and the skin covering these and the adjacent parts. The subcutaneous abdominal artery is one of the two branches of the external pudic artery in the female, the other being the mammary artery. This last is very voluminous, and distributes several main branches to the mammary glands and tissue, and also by a prolongation between the thighs, supplies the inferior commissure of the vulva and gives off many smaller branches, which spread into a network among the glandular tissue and the cutaneous structure. Here is the close connection, then, between the skin of the posterior part of the cow, from the lower point of the vulva down between the thighs and around the udder, and the udder itself. The same artery supplies all this portion of the skin, furnishes the subcutaneous glands and the hair follicles, and the whole cutaneous structure, and the hair also with blood, and also provides for the demands of the milk-secreting organs. A vigorous circulation through a voluminous arterial system * * * gives a relatively vigorous milk secretion, and, as well, a growth of hair, which curls and forms the well-known peculiar structure of the escutcheon."

The Royal Agricultural Society of England did the author the unusual honor to an American of printing his " Summary of Ten Points," illustrating it with engravings of each class of escutcheon, in the volume of their journal for 1885. As this circulates very extensively among the more intelligent of the

agricultural interest, the article excited much interest and awakened much attention to the subject there. The following letter was printed with the article; it is from a distinguished agriculturist to the late H. M. Jenkins, late Secretary of the Royal Agricultural Society of England:

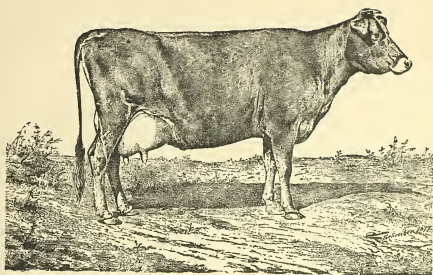
DEAR SIR: I have felt very great pleasure in reading through the treatise on Guenon's system of selecting cows by the escutcheon, that you have been good enough to forward to me, with a request that I would express an opinion on the subject. I, therefore, beg to say that I consider it of the utmost importance, particularly at the present time, when agriculture is straining every nerve to keep its head above water, and the produce of the dairy is becoming of so much importance not only to the farmer, but to the community at large; I have, therefore, jotted down some of the points that are most essential in an animal that is intended to take a useful position for dairy purposes; and I think that it may be safely said that any cow used for such a purpose without the necessary milking characteristics, should be fattened off as soon as possible, as such an one should seldom, if ever, be kept for breeding purposes. I think, too, that young dairy animals should not be let run on beyond two and a half years old, without producing a calf, as I am of opinion that if they are left longer, their milking propensities suffer. The animal will become grosser, and a tendency to form flesh will be set up in the system in proportion to the length of time that the demand for producing milk is neglected. I think all young dairy animals should be kept in good store condition only, as it is doubtless an easy matter to spoil a young cow for dairy purposes by too liberal treatment, however well her markings are developed in early life. In evidence of this we have the experience of many Short-Horn men, who bred for thick backs and very large muscular thighs, at the expense of the milk.

The perfection of milking characteristics, to my taste, is an animal with a fine escutcheon, with rather thin thighs, giving plenty of room for the bag to extend itself when necessary; the udder, of course, should be deep and broad, extending well forward, with four well placed teats of medium size, and with the skin of the udder as elastic as a kid glove. Then with a cow of good constitution, a well formed body, on four good legs set outside of her, with a rather fine long head set on a thin neck, with silky hair (if it is a little long so much the better in this changeable climate), covering a rich elastic skin, I think you may expect pretty good results in the dairy. The horns should be fine and well placed on the head, curving rather inwards than otherwise, and the back should be straight, with a rather long tail starting from the body at right angles with the back, if you want a handsome animal; and of course it is desirable to attain as many points as possible. Beauty must be admitted in judging for competitions, although it is not an essential characteristic for the dairy; and consequently a pretty animal may sometimes be properly dispensed with when brought into contact with a neighbor who surpasses her in usefulness, although lacking some of her good looks. The cow should be able to move well, and possess an appetite that will enable her to support her constitution when she is making a liberal return to her owner, who is treating her well.

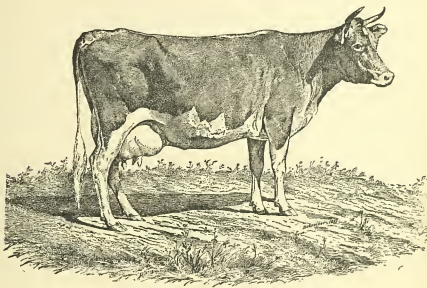
Yours very truly,

G. W. BAKER.

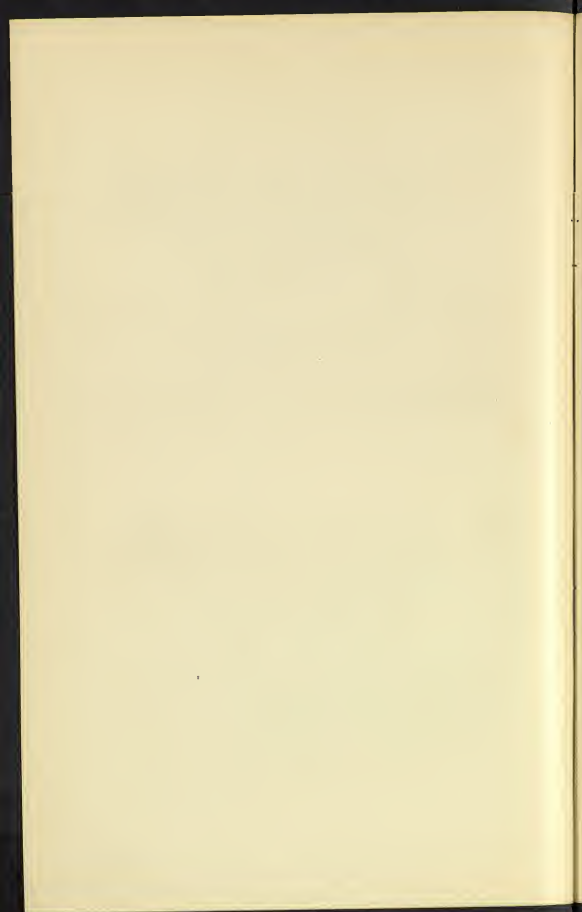
LUTON HOO PARK FARM.



IMPORTED JERSEY COW—BLACK BESS.



IMPORTED JERSEY COW—TIBERIA.



DR. LINSLEY ON THE VALUE OF THE ESCUTCHEON.

Dr. John S. Linsley, of New York, the author of that admirable and comprehensive work, "Jersey Cattle in America," in addition to his chapters on the escutcheon in that volume, published in the Jersey Bulletin in 1888 a series of articles on breeding, from which we make the following extracts:

"If the breeders' art were to be thoroughly systematized as far as relates to Jersey cattle, the writer would say that there are three essential and inseparable principles which pertain to the selection and propagation of animals, which might be classified as follows:

1. Perfect escutcheon.
2. Perfect product.
3. Perfect pedigree.

THE PERFECT ESCUTCHEON.

"The escutcheon is of no use to a man who does not understand it, but to the man who understands, it is of great value. And this branch of our subject well illustrates the adage that "A little knowledge is a dangerous thing," for it is a matter where careful study and accurate knowledge are important, as a few practical examples will show to the student of thorough breeding.

HISTORY OF AN ESCUTCHEON.

"It was at a sale of Jersey cattle in the city of New York that a heifer calf was quoted as of a very fashionable pedigree, and having a "remarkable escutcheon and udder development." Everybody said the calf was a wonder. The owner, the lookers on, the veteran breeders, the experts, the auctioneer, all were agreed that whatever might be thought of her escutcheon, no such udder had ever before been seen upon so young a heifer. Those who supposed they knew a thing about escutcheons were very sure that they had found one of the coming cows, and those who ignored escutcheons altogether as a delusion, a fantasy of a fanatic Frenchman, were very sure that they could make no mistake in predicting a future for the calf that carried such a large, loose and flexible udder. The veterans admired, the experts handled her points, and all expatiated upon the science of selecting the best specimens. And then, the pedigree, at least as much as was known and recorded, was thought to be a guarantee of about the highest standard of royal blood, and to crown all she was of — "solid color."

So much for general and particular estimation of blood and fine points. As she appeared in the ring, the auctioneer said she was a "good 'un," and the brisk bidding seemed to fan the

flame of his enthusiasm, and reciprocally that of the buyers, so that she brought a high price and went into a choice herd, where good blood and large escutcheons were highly prized. A prominent Cattle Club member and "expert judge" afterward visited the herd, and was so much delighted with her promising features that he declared he "would rather have that heifer than any five animals" in another very large herd which he had seen a few hours before.

A SEQUEL.

"The heifer was well cared for and petted, and every attention given that she might develop into a great butter cow. She was mated with the choicest blood to be found, but her cowhood was a very great disappointment, for she exhibited the character that Guenon calls a *batard*, that is, falling off in her milk rapidly from the beginning of gestation, and in this case going dry five months. As a cow she was worth what the butcher would pay for her; as a breeder for the dairy worse than worthless, and though her owner kept her, hoping she would turn out better, not knowing the science of the escutcheon, yet she was more than a thousand dollars loss to him."

She appeared to have a broad selvage escutcheon, the upper portion of which was broken, and had an abundance of those coarse, bristly hairs reaching even to the vulva, and which are always a sign of degeneration; she also had on each thigh deep triangular cuts into the escutcheon so often seen on the fifth order; upon the udder were two large and uneven size ovals, upon which, no doubt, were tufts of coarse, harsh, wiry hair. No one familiar with the escutcheon marks, but would have condemned the cow, only allowing something for her good pedigree, and otherwise good build.

"The writer of this series of articles having had abundant opportunity to observe the escutcheon upon many thousands of Jersey cattle during the past ten years, and being quite familiar with Jersey pedigrees, is enabled thereby to trace out the source of this bad blood which contaminated this cow. The blood of the strain to which she belongs is generally prized very highly, but many individuals have defective escutcheons, one variety exhibiting in the flandrine form numerous little bunches of irregular size, distributed over the ascending portion, like bogs or tussocks in a smooth lawn; others having that freak of nature, a double selvedge, a form which ought not to be cultivated.

"One very famous cow having six and one-fourth per cent. of this bad blood exhibits one small tussock in what is otherwise

a very fine escutcheon, and it is interesting to know that there has been a great deal of wild writing for the journals regarding the escutcheon with the little tussock. One breeder attempted to found a herd with this particular strain of blood, but was obliged to give it up, because the butter quality was lacking in almost every specimen. The same breeder has been very successful with another family, which exhibits very fine escutcheons.

"Many animals having this defective blood have sold at very high prices, one particular heifer having a freak of a double selvedge escutcheon brought over two thousand dollars, but the writer ascertained that she ranked in the herd to which she went as one of the "good-for-nothings."

THE ESCUTCHEON.

"When any Jersey breeder announces that he has "purchased cattle for himself and others to the amount of many thousand dollars, and that he never bought an animal upon the escutcheon, as he never understood it, and never saw a man who did understand it," such breeder necessarily confesses that he has made, as a judge, irretrievable errors and extravagant expenditures for many poor animals. For it goes to his or any other man's discredit that he has neglected an essential part of his education as a breeder and expert, that inasmuch as a knowledge of the escutcheon is essential, and is easily learned and understood, that he who ignores such knowledge does himself, as well as others, great injustice.

"I apprehend that some who have given but a superficial attention to the subject, could have too readily allowed their minds to become confused with the apparently endless details and variations in the several classes, orders and combinations; and yet, to my mind, the system is a masterpiece of skill in its orderliness.

A THIRD ORDER COW.

"A cow being somewhat noted, I had asked her owner, before I had seen her, what sort of an escutcheon she had, and he replied that he "didn't care much about escutcheons, but it was a curveline." Afterward I had, in company with several gentlemen, an opportunity of studying her points. As we were looking at her, the first remark that was offered, and that by a veteran breeder, was, "Why, she has no escutcheon at all; according to Guenon, she wouldn't give more than seventeen quarts a day." Now, the veteran was more accurate than he knew, for he unconsciously stated a fact which he had learned from only a partial study of the system. He was evidently greatly disappointed in the cow, and probably concluded in his own mind that he had found another exception to the French-

man's theory. He did not mean, however, that the cow had no escutcheon at all, but in his expectation of seeing a cow (he had evidently not studied her reported tests carefully) that would yield a fabulous quantity of milk, ejaculated an exaggeration of his great surprise.

"A normal escutcheon of the third order always indicates that the cow will go dry for three months during gestation, and if it be of the flandrine, or selvedge, or curveline class, and she of the weight of one thousand pounds, that she will yield about seventeen quarts daily during her first month, or at the flush, as it is called, provided she has proper feed and care. As to the amount of solids (cream, caseine and mineral salts) that depends upon the quality of ration. If she is fed a standard ration—that is, in summer clover pasture and in winter clover hay, with two to six pounds of mixed grains daily—she will yield her full bulk of milk, but the amount of solids will depend partly upon her breed characteristics and partly upon her individual power to separate the milk solids from her food. A full ration, giving six to sixteen pounds mixed grains, will increase the amount of solids with the same bulk of milk; while a forced ration, giving sixteen to fifty pounds of mixed grains, will still further increase the richness of the milk without increasing its bulk.

"Below is a table showing the capacity of this cow on full and forced rations.

TABLE showing the capacity of a Jersey cow with a third order high-class escutcheon; weight, one thousand pounds; age, four to eight years; calves, three hundred and sixty-five days apart:

MONTHS.	Milk.	Quarts daily.	BUTTER.	
			Full feed.	Forced feed.
	Lbs.		Lbs.	Lbs.
1st,	1,175	17 $\frac{1}{2}$	83	105
2nd,	1,065	16	76	103
3d,	939	14	67	102
4th,	775	12 $\frac{1}{2}$	60	85
5th,	635	9 $\frac{1}{2}$	49	75
6th,	625	9 $\frac{1}{2}$	48	65
7th,	615	9 $\frac{1}{2}$	50	65
8th,	525	7 $\frac{1}{2}$	45	50
9th,	265	4	22	30
10th,	Dry	.	.	.
11th,	Dry	.	.	.
12th,	Dry	.	.	.
Total,	6,619	.	500	680

"The same cow, if bred so that her calves should be born fourteen months apart, would yield in eleven months, forced feed test, a total of eight hundred and sixty-five pounds of butter. If her calves should be fifteen months apart, her test would reach nine hundred and twenty-five pounds. This is not a theoretical problem, not a conjecture, but a matter of history. If a cow of the same size, the same quality, the same age, having the same voracious feeding power and constitution, and in the hands of a skillful feeder, the same in all respects except escutcheon; having instead an escutcheon of the first order, that is, an escutcheon differing from this in that there are no buttock feathers, while the thigh wings are of the full width, eighteen inches, and full depth, ten inches. Such a cow would yield, according to the following table:

TABLE showing the capacity of a Jersey cow four to eight years old, weighing one thousand pounds, and being of the first quality, with an escutcheon of a high class and of the first order.

MONTHS OF 31 DAYS.	Milk.	Quarts daily.	BUTTER.	
			Full feed.	Forced feed.
	Lbs.		Lbs.	Lbs.
1st,	1,733	26	123	157
2nd,	1,600	24	114	154
3d,	1,401	21	105	153
4th,	1,336	20	102	146
5th,	1,270	18	94	127
6th,	1,200	17	92	125
7th,	1,230	16	90	118
8th,	1,064	15	88	112
9th,	1,000	14	85	97
10th,	975	13½	86	97
11th,	900	12	82	75
15 days,	234	6	22	45
Total, 356 days,	13,897	1,089	1,406

"The third order cow would yield at the flush, upon standard feed, seventeen and one-half pounds of butter in seven days; under full feed, twenty-one pounds, and upon forced feed thirty to thirty-five pounds, while the first order cow would yield under standard feed twenty-six pounds in seven days; upon full feed, thirty-one pounds, and upon forced feed thirty-nine pounds.

"Annual tests of Jersey cows by the escutcheon will demonstrate the necessity of a thorough cultivation of the first order in the best classes. Among the historic cows, the following

had good escutcheons: Alpeha 171, Jersey Belle of Scituate 7828, Eurotas 2454, Lady Mary 1148, Value 2d 6844, Princess 2d 8046, Oxford Kate 13646, Mother Hubbard 24388, Mollie Garfield 12172, Attractive Maid 16925, Pearl Armstrong 2670, Hilda D. 6683, Gold Lace 10726, Chrome Skin 7881, Brenda of Elmhurst 10762, Hazen's Nora 4791, Belmeda 6229, May Blossom 5657, Matin 7768, Faith of Oaklands 19696, Couch's Lily 3237, and Marjoram 3239.

"When the test of a year with calves not more than three hundred and seventy days apart, weight of cow and quality and quantity of feed in accurately made rations, are vouched for by competent authority, the value of the escutcheon as one of the essential elements in thorough breeding will be absolutely proven.

"Escutcheon culture is one of the elements of leading importance in the process of pedigree making. A perfect escutcheon is the finishing point of a perfect cow, and no cow ever was or can be perfect without a perfect escutcheon.

"The above proposition is demonstrable by the history of the best Jerseys, living or dead. A herd of well-escutcheoned cows, that is, cows having escutcheons of the first order in the higher classes, is a great rarity. Few cows of any breed have perfect escutcheons. When a perfect escutcheon is found, however, it is pretty sure to follow that all other points are at or very near perfection. The escutcheon of full width and height, with no blots or blemishes upon any portion, is characterized by a downy covering softer than satin, through which may be seen the rich orange brown epidermis, and complementary to this feature it may be observed that the cow is of the perfect milking type—of the symmetrical wedge form, and not the parallelogram type—that she has a spheroidal udder, which milks empty and is as soft and flexible as a silken purse; that her bones are slender, her back level, the hide flexible, the coat furry throughout, the loins wide, haunches not too prominent, tail thick at the setting on and very finely tapering at the switch and hanging like a plumb-line, rump high, straight and level, buttocks full, thighs low, flat and muscular, twist high and well tucked up, sides round, belly large, flanks narrow, shoulders wide and sloping, withers quite sharp, dewlap of medium size, chest large and well rounded, neck of medium thickness, head small, ears yellow within and heavily fringed, eyes large and very prominent, crown well arched and not too hairy, cheek muscles fine and prominent, nostrils wide, lips thin, mouth broad, muzzle turned slightly upward, legs fine and straight, hocks flat and wide, feet small and round, horns of medium size. Such a cow will yield her full amount of milk upon grass or a well-balanced ration for about three months after calving, and gradually lessen the yield during the period

of gestation, but never going dry spontaneously, and is dried off with difficulty a few days before calving.

TABLE showing the yield of cows having escutcheons of the flandrine, selvedge, curveline, bicorn and demijohn classes:

DAILY YIELD OF MILK IN QUARTS BEFORE GESTATION.

Weight of cow.	ORDER OF ESCUTCHEON IN HIGHER CLASSES.					
	First.	Second.	Thlrd.	Fourth.	Fifth.	Sixth.
<i>Lbs.</i>						
2,000	51.47	42.90	34.33	25.76	17.19	8.62
1,950	50.78	42.32	33.86	25.40	16.94	8.48
1,900	49.49	41.25	33.01	24.77	16.53	8.29
1,850	48.18	40.15	32.12	24.09	16.06	8.03
1,800	46.88	39.07	31.26	23.45	15.64	7.83
1,750	45.57	37.98	30.39	22.80	15.21	7.62
1,700	44.28	36.90	29.52	22.14	14.76	7.38
1,650	42.97	35.81	28.65	21.49	14.33	7.17
1,600	41.67	34.71	27.77	20.83	13.99	6.95
1,550	40.37	33.64	26.91	20.18	13.45	6.72
1,500	39.06	32.55	26.04	19.53	13.02	6.51
1,450	37.76	31.48	25.20	18.92	12.64	6.36
1,400	36.46	30.39	24.32	18.25	12.18	6.11
1,350	35.16	29.30	23.54	17.68	11.82	5.96
1,300	33.86	28.22	2.58	16.94	11.30	5.66
1,250	32.55	27.13	21.71	16.29	10.87	5.45
1,200	31.24	26.04	20.84	15.64	10.44	5.24
1,150	29.95	24.96	19.97	14.98	9.99	5.00
1,100	28.65	23.88	19.11	14.34	9.57	4.80
1,050	27.32	22.77	18.22	13.67	9.12	4.57
1,000	25.73	21.44	17.15	12.86	8.57	4.28
950	24.74	20.62	16.50	12.38	8.26	4.14
900	23.51	19.59	15.67	11.75	7.83	4.11
850	22.7	18.39	14.71	11.03	7.35	3.67
800	20.83	17.36	13.89	10.42	6.95	3.48
750	19.53	16.31	13.09	9.87	6.65	3.33
700	18.29	15.25	12.21	9.17	6.13	3.09
650	16.93	14.11	11.29	8.47	5.65	2.83
600	15.62	13.02	10.42	7.82	5.22	2.62
550	14.32	11.94	9.56	7.18	4.80	2.52
500	13.02	10.85	8.68	6.51	4.34	2.17
450	11.25	9.38	7.51	5.64	3.77	1.90
400	10.41	8.68	6.95	5.22	3.49	1.76
350	9.11	7.60	6.09	4.58	3.07	1.56
300	7.81	6.51	5.21	3.91	2.61	1.31

TIME OF GOING DRY DURING GESTATION FOR FLANDRINE, LEFT-HAND FLANDRINE, SELVEDGE, CURVELINE, DOUBLE SELVEDGE AND SQUARE ESCUTCHEONED COWS.

First Order.	Second Order.	Third Order.	Fourth Order.	Fifth Order.	Sixth Order.
0 to 30 days.	30 to 60 days.	60 to 90 days.	90 to 120 days.	120 to 150 days.	150 to 180 days.

The left-hand flandrine, double selvedge, and square escutcheon cows yield about ten to fifteen per cent. less than the above tables. The limousine and carresine escutcheon cows yield from fifteen to thirty per cent. less than the tables.

TIME OF GOING DRY OF BICORN, DEMIJOHN, LIMOUSINE AND CARRESINE COWS.

First Order.	Second Order.	Third Order.	Fourth Order.	Fifth Order.	Sixth Order.
30 days.	60 days.	90 days.	120 days.	150 days.	180 days.

"I do not claim that the tables are absolutely accurate, but that they will serve as a chart for comparison with the different orders of escutcheons, not only among Jerseys, but all breeds. I have arranged thirty-five sizes of cows in place of the three sizes of Guenon, and computed the weight of their milk.

"The weights of cows will include the smallest Jersey and full-sized Holstein.

ESCUTCHEON CULTURE.

"The theory and practice of thorough breeding is developing into a system of applied mathematics as far as it is possible to measure the vital processes in dairy animals. That the use of the escutcheon as a guide to breeding the best of dairy stock will prove broadly and grandly successful I have not a doubt, provided that it is thoroughly studied and followed by breeders.

"For the past decade I have examined all the Jerseys on sale in New York, and visited and made myself familiar with many large herds owned by distinguished breeders, always looking for evidences to prove or disprove the practical value of the Guenon system as the chief index of dairy or milk-test power in the breed.

"At the late breeders' combination sale in New York I adopted the plan of marking and estimating the milk-power of every animal. As the old tar-box building (I hope it wont burn up any Jerseys) has many dark stalls, and some of the cattle were badly arranged and could not be inspected, I found the task a difficult one, and out of the three hundred and fifty animals was able to inspect only two hundred and forty-six cows and heifers and seventeen bulls.

"Of the 246 cows and heifers, 181 indicated that their flow of milk would continue up to calving or within a month of it, and of these persistent orders 58 were flandrines, 53 selvedges, 25 demijohns, 14 curvelines, 12 bicorns, 11 limousines, 5 carresines, 2 left flandrines, 1 square and 1 triple selvedge. That 42 cows indicate that they will go dry from one to two months,

of which number 18 are flandrines, 10 are selvedges, 6 curvelines, 2 bicorns, 4 limousines, 1 left flandrine and 1 square. That 18 cows indicate that they will go dry about three months, of which 7 are flandrines, 6 selvedges, 2 curvelines, 1 bicorn, 1 limousine, and 1 square. That 2 flandrines and 1 bicorn indicate their character by preferring to go dry for four months.

"This tends to show that what is claimed for the Jersey breed as a race of very persistent milkers is altogether a correct statement of a well-known fact, but not so well known is the evidence of these escutcheons that out of a total of two hundred and forty-six cows, only twenty-seven animals hang out their index clearly indicating their determination to yield their normal quota of milk when given the requisite care and good treatment, while two hundred and nineteen cows indicate that under no circumstances will they render a normal yield of milk, whatever else they may yield.

"Among the noted cows in the sale were some escutcheons, especially flandrines, which were very wide in the upright portion, but more or less deficient upon the thigh wings, showing that being large animals and perpetual in their flow they must aggregate a large annual yield, yet, nevertheless, these cows, as indicated by their reported yields, verified the deficiencies of their escutcheons, for by the rating of size and weight they fell far below the normal quantity of milk.

"The grand cow *Gazella* 3d 9355 shows many points of resemblance to her famous ancestor *Lady Mary* 1148, the gray coat, the orange-brown skin, the deep udder, the upright portion of her flandrine escutcheon, but her thigh escutcheon is much smaller than *Lady Mary's*, and, although about two hundred and fifty pounds heavier, she is credited with the same yield of milk as *Lady Mary*.

"*King's Trust* 18946, a very nearly perfect model, has a flandrine escutcheon, from five to seven inches wide in the upright portion, but not full out on thighs. She verifies in her escutcheon the yield with which she is accredited, as also does *Gazella* 3d.

THE ESCUTCHEON OF THE BULL.

"In my former tables I have endeavored to show how the dairy cow should be rightly estimated, both as to size of body and size and shape of escutcheon, in order to determine her character as a producer of milk, regardless of the amount of solids that she may yield. There is a growing demand for Jersey cows to supply the best quality of milk for those customers who, having had the sight and the taste gratified by such a luxury as rich Jersey milk, will accept of nothing but the pure article. Indeed, the best customers in buying Jerseys at the New York sales for the past two years have been look-

ing for large-escutcheoned, large-uddered cows to stock milk dairy farms.

"My conviction is that it is best for breeders to cultivate the large, fine escutcheons as thoroughly for the butter or cream dairy as for the milk market, although there is another type of escutcheon which may be advantageous to the butter dairy: I have shown that as far as the escutcheon could indicate, the recent breeders' sale in New York showed that only about one Jersey in ten of those offered would come up to the standard of first rate dairy cows for the milkman.

"The time has come when those who wish to breed first rate dairy cows must, as a matter of self-protection, give enough attention to the study of escutcheons to know just what they signify. First rate dairy cows cannot be bred unless the escutcheon of both sire and dam is of the perfect milking type.

"A bull fit to head a herd should not only have an escutcheon of full width, full height and finest quality, but he should be of a family noted for perfect escutcheons. The escutcheons of the bulls at the breeders' sale (of which I examined seventeen) indicated that the art of breeding good bulls is lost, or soon will be lost, unless more pains is taken to produce first-class animals. Nearly every specimen offered was of the beef type, or parallelogram shape, with very low twist and fat hams resembling a fashionably-bred Berkshire boar, and the escutcheons were such as obtain with that style of bulls, mostly third or fourth rate. With two or three exceptions, they were so tight in the twist that I could not press the edge of my hand between their heavy hams. There was not a first rate escutcheon among the seventeen. Mr. W. A. Reburn offered a bull that showed some very good points. There was room in his twist for at least a couple of good-sized fists to be inserted, and the arch was occupied by a fair curveline escutcheon of soft and satiny texture. The bull was of the milking dairy type in all other points. A good bull was offered by Mrs. B. M. Delius also fairly well escutcheoned.

"It will not do to let the most useful dairy feature in the bull be lost. If the breeder cannot put a first rate escutcheon at the head of his herd, he may as well write "failure" in large letters upon all his dairy plans. The time was when an escutcheon was valued upon a bull, and the record of the following list as sires of milk-producing cows is ample vindication for each and all of them wearing an escutcheon quite up to first order, or above second rate: Mercury 432, Rajah 340, Pierrot 636, Marius 760, Rex 1330, Signal 1170, The Hub 1009, Sweepstakes Duke 1905, Prince of Warren 1512, Gilderoy 2107, Stoke Pogis 3d 2238, Tormentor 3533, LeBrocq's Prize 3350, Prince of Scituate 3888, Wanderer 3014, Homer H. 3683, Stoke Pogis 5th 5987, Forget-Me-Not 6291, and Pedro Star, the beautifully es-

cutcheoned bull bred by Miller & Sibley, which took prize for progeny at a western fair last fall. Some one may ransack his memory to bring up the shades of a bull having a poor escutcheon to prove that the feature is of no value whatever. Yes, and I happen to know just the bull he might bring up if he is familiar with most of the noted animals. I have him in my mind's eye; his escutcheon was of moderate size, but his dam, a famous cow, had an escutcheon eighteen inches wide across the top of the udder and thighs. His grandams and great grandams were famous for their escutcheons. The bull himself had the pick of the famous cows of the country for many years, and yet, although he is credited with a number of daughters which have made large butter tests under pretty high pressure, not one of them would yield the amount of milk of his dam or grandam, nor reach the amount of butter they were accredited with, upon the same kind of ration.

"Whatever the size of cows desirable to breed for the greatest profit in the milk dairy, it ought to be made very clear to every progressive breeder that the first essential in thorough breeding is to head the herd with a bull having a fine escutcheon fully eighteen inches in width, the top filling a large, open, high-arched crotch. Such a bull forms the suitable foundation from which to build upward in all that relates to perfect product and perfect pedigree.

"The time will come when breeders will fix upon a type of escutcheon to be cultivated either for the milk dairy or the cream dairy, and the first question will be, "What is the size of it?" It has never yet been determined which is the most profitable, a cow weighing five hundred, seven hundred, nine hundred or one thousand two hundred pounds. But the time will come when the question will receive attention by annual tests for milk or for butter. Then the breeder in selecting his stock will always consider the size of it.

"It is apparent that the breeding of Jersey cattle is becoming divided up into classes, of which there are chiefly two, which are becoming every day more definitely marked: the one as the large milking Jerseys and the other butter Jerseys. One class of cattle is characterized by large and nearly perfect escutcheons, correspondingly large udders, and yield about the normal quantity of milk, but still varying greatly in the amount of nutritive matter it contains. The other class have, as one writer expressed it, when speaking of his preference for butter cows, "rather poor escutcheons," and, at the same time, rather good escutcheons, for, although they indicate from a moderate to a very small yield of milk, they usually show persistency, so that like the large milkers they seldom go dry. That is, a cow may be of the first order, or second, as to time, but of the third, fourth, fifth or sixth order as to quantity, and yet have

the cream-yielding quality so largely developed that in the small amount of milk which she yields she will concentrate the normal amount of solids for her weight and rations, and produce in a twelvemonth, with calves a year apart, an amount of butter equivalent to her own weight.

"The large milker may yield from twelve to sixteen times her weight of milk in a year, and may produce more than her weight in butter. The small milker may yield even less than three times her weight in milk for the year.

"It would be still more helpful if more annual tests were available, and the weight of every cow could be shown at her heaviest or just before calving, and her lightest after milking three months. Cows vary greatly in weight at these extremes of productiveness. Chroma 4572, for instance, is estimated to weigh one thousand two hundred pounds or more before calving, but after milking two months has weighed one thousand and twenty-five pounds. If a record of every escutcheon were also correctly shown it would be of great value, especially if another column were added to show the persistency, or time of going dry, of all tested cows.

"For if one desires to cultivate large capacity in his cows he must have large escutcheons, large udders, large digestive power, and the mill cannot close many weeks in the year.

"I have known a breeder who put at the head of his herd a bull because he had a noted grandam and a two hundred dollar service fee was charged for the sire, whereas the dam of the bull was a very inferior cow which went dry fully four months. If one desires to cultivate the quality of going dry for a specified time, one, two, three, four or five months, he can rely upon the escutcheon as a guide to help achieve such a result, as well also as the opposite quality of her persistency."

Prof. Magne, V. S., of the Veterinary School, Alfort, says:

"The direction of the hair is subordinate to that of the arteries; when a large plate of hair is directed from below, upwards, on the posterior face of the udder, and, as the twist, it proves that the arteries that supply the milky system are large, since they pass backwards beyond it, convey much blood, and consequently give activity to its functions. Upper tufts, placed on the side of the vulva, prove that the arteries of the generative organs are strongly developed, reach even to the skin, and give great activity to those organs. The consequence is, that after a cow is again with calf, it draws off the blood which was flowing to the milky glands, lessens and even stops the secretions of milk.

"In the bull the arteries, corresponding to the mammary arteries of the cow, being only for coverings of the testicles, are very slightly developed, and there, accordingly, the escutheons are of small extent."

A COMPREHENSIVE SUMMARY
OF
Guenon's System of Selecting Cows by the Escutcheon.

In the volume of Agricultural Reports of Pennsylvania for 1878, will be found the report of a commission appointed by Governor Hartranft, at the solicitation of the State Board of Agriculture, to examine into the value of the system of M. Guenon for ascertaining, by outward marks, the true value of every cow, calf, or bull. The constant and growing demand for copies of that report shows that the attention of the farming community has been awakened to the great value of the system. The State printed fifteen thousand copies, and, at earnest solicitation, another ten thousand copies, and was again importuned to print another ten thousand copies of the report, but declined; and to supply the demand for a greater elucidation, the book "How to Select Cows," was issued, so that up to this time thirty thousand copies of the two articles have been issued, until now the word escutcheon is, at least, well known by every intelligent farmer, if its interpretation is not practically applied. No animal of any importance is now advertised for sale without stating what grade of escutcheon it bears. Thus the work of this Board is bearing its fruit, and it is not too much to say that, in its practical results, it has elevated the grade of stock throughout the United States; has caused the selections to be more accurately made; has saved farmers many thousands of dollars, and been the cause of consigning many a worthless animal to the butcher that would otherwise have been raised at a loss.

As the word escutcheon, and the theory connected with it, was first applied by Guenon, his system has been popularly called the "Escutcheon System," and by unbelievers it has met with some derision, because they supposed, without studying Guenon's book, that that was the only point he made as a guide to the judgment of the farmer. Guenon judged by ten points, and, in order that the system should be properly placed before the farmers of this State in the twenty-five thousand copies of the reports that are distributed this year, I have prepared this condensed statement of the leading points:

The time is not long since when it was said "Cotton is King."

But statistics prove that it has been dethroned, and that the dairy, with its products, has assumed the sceptre. When we consider that there are in value one million dollars a day, for every day in the year, sold of dairy products, and the total yearly products are seven hundred and fifty millions, and there are from thirteen to fifteen million cows in the United States, we need hardly call attention to the importance of the subject. But we desire to hold your thoughts to one branch of this subject—the cow, described by Dickens as the mother of blessings; for it is through her all these treasures are produced, and my aim will be to show how all these treasures may be increased. It will be done through explaining the points of Monsieur Francois Guenon's system of selecting cows by the escutcheon. For if, by this system, we cannot only *increase the quantity* of milk produced, but also *improve the quality*, all must admit that increased receipts of money will follow.

We can readily see, if the average yield of a herd is *six* pounds of butter per head each week, and that yield can be increased to *nine* pounds, without any more cost, that the last three pounds' increase will be all profit; or, to put it in another way, if at present your milk is pretty good, and gives a pound of butter to every twelve quarts of milk, how much the profits would be increased, if, with the same labor, it took only nine quarts to make a pound of butter.

Now, this can be done. And the surest way to do it is to raise the tone of the herd. No farmer should hesitate a moment to accomplish this purpose; and it makes but little difference how it is done,—whether it be through careful breeding, judicious purchases, or intelligent feeding. Adopting either of these, or even all of them, the keynote is

Proper Selection.

Every one has his own views about this. One will choose by the crumpled horn, the capacious, thin-skinned udder, the large milk-veins, and their entrance into the belly, the color and texture of the skin; while another will judge by the feminine appearance, the wedge-shape, the yellow ears, the small head, and the broad muzzle, or by some other favorite method. Yet, with all the marks, every dairyman will occasionally purchase an animal that deceives him at the milk-pail or cream-pot, and she is apt to be the handsome one. The system of Monsieur Guenon does not interfere with any of these modes of judging; it simply harmonizes with and becomes an adjunct to them. Now, if we have one, three, five, or six points by which to judge the value of an animal, why not add to them still one more, especially if that one is worth more than all the others put together? With none of these modes can we tell just what a cow will do; with all of them combined we may

select a pretty good cow, and at other times we may not; but by the escutcheon marks, and the other points by which Guenon judged, we can very surely tell whether the cow about to be purchased is a good one, how much milk she will give, how much butter she will make, and how long she will milk. In these times when competition is so keen in the butter and cheese market, it behooves every man to understand his business, and have his herd of the best. The cow is his best machine; and the old adage of "goods well bought are half sold" applies here perfectly. A well-selected cow will always prove a profitable investment. This system will enable any one to tell the cow which is going to fail in her milk, and go dry for too long a time to be profitable; and it should be acquired, if only for that purpose.

Sketch of Guenon.

First, let us see who Guenon was. Guenon as a boy was a young cowherd, living near Libourne, in France. His father, a gardener, had early taught his son the varieties of plants, and thus he was led to notice the classifications and kinds of fruits and plants. He studied the works of the best writers on botany and agriculture, and applied his knowledge by following up all the ramifications of the vegetable kingdom, studied their external signs and ascertained their qualities and productiveness. His mind was thus trained for developing his after-discoveries.

When he had the care of cows as a cowherd, he took them to and from the pasture and watched them all day; for in France, having no fences, the children in turns, watch their own and their neighbors' cows. Thus various breeds and qualities of cows were constantly under his eye. A thoughtful lad, he was one day rubbing them down, when he noticed the difference in the hair, parts of it running upward, contrary to the usual growth of hair on the animal. In addition to the significance of the variations in the leaves and kinds of plants, he had heard mentioned some quirls in the hair and other signs, which were said to have some significance. The thought struck him, could there be any visible marks denoting different values? The thought once raised, he pursued it from day to day, from year to year, all the time discovering new points, which finally led him to believe he had made important discoveries. Like the learner of the present day, he met many things which frequently made him doubt and which were great drawbacks to the system of classification he was endeavoring to form from the yet conflicting appearances.

His attention to the matter having first been drawn by the dandruff on certain spots on the hind-parts of the cows and the variations of the hair, in pursuing these inquiries he found a great variety in the *shapes* of these quirls. This led to a new

train of reflection and observation, which resulted in his becoming convinced that these shapes were the signs by which to distinguish cows and to know their good and bad qualities.

After years of perseverance, he got his ideas into such a fixed arrangement that he was emboldened to give it to the world, and stand the scrutinizing tests of committees of various agricultural societies. The result was shown in the many orders for his book, the medals and membership certificates of the leading societies and a pension from the government of three thousand francs for life. The value of the system was established. It has spread into every country where agriculture is encouraged, and his work has been frequently translated.

As we look at his portrait, he appears to have a clear eye, a cool head, great determination, firmness of character, a well-balanced mind, and, with it all, a vigor of constitution which buoys him up and enables him to override obstacles.

His System.

His system was based upon the discovery that on the posteriors of the bovine race, reaching from the vulva, and extending down over the udder and on the inside of the thighs, a portion of the hair grew upwards and was easily distinguished from the surrounding hair growing downwards. In so doing, the upward hair takes different shapes which he called escutcheons. The size and shape of these indicate the quantity of milk the cow will give and the length of time she will continue to milk after calving. This latter was also affected by certain tufts of coarse hair or blemishes on the escutcheon.

Then he noticed the character of the hair growing upon the escutcheon, the color of the skin under it, and the quality of the skin. It depends upon the quality of the hair and the skin to define the quality or richness of milk the animal will give.

Particular attention must be given to these points, for they have a great bearing on the judgment to be formed; and the escutcheon is only to be judged in connection with these and other points.

The rules of the system are as applicable to calves and bulls as to cows; for by them can be told, after three months, whether it will pay to raise the calf, or to dispose of it,—if a cow calf, whether it promises either or both quantity and quality; if a bull calf, whether his "get" is likely to prove valuable. In either sex, the young should be judged by class and size of escutcheon, by the color and texture of the skin and hair. Thus a saving is effected in not being at the expense of raising a poor calf, and not being disappointed in future results. From this ability to raise or purchase only the best, the improvement of the herds will be very great and we shall breed only the best.

Summary of the Ten Points.

The main theory of Guenon was, that in a good animal a number of points would be discernible, which would enable any one to select the good from the bad. So far from judging by one mark alone—the escutcheon, as it is generally stated—he expressly declares that ten points must conform to make a first-class animal, and these must be supplemented by several minor matters to enable the judge to estimate the true value of the animal.

We may summarize these points of judgment, thus; 1. The skin. 2. The hair. 3. The conformation. 4. The age. 5. The period of gestation. 6. The health. 7. The feed. 8. The breed. 9. The size. 10. The escutcheon.

Until he had become acquainted with these matters he would not undertake to say how much milk a cow would give; how long she would give it, nor of what quality. When he did know these points his judgment was infallible, as numerous public tests he made proved, and as the testimony given by committees of all the leading agricultural societies of his country declared and testified.

The Skin.

1. The skin, he said, must be fairly thin, mellow, oleagenous and of a rich nankeen or golden color, particularly about the udder. If it was such, the unctuous character of it would be indicated by a dandruff, which, when exuded, would dry and could be rubbed off. The skin is one of the best tests, both in the feel or handling and the color. A truly rich animal, no matter of what breed, will show on the inside of the ears, around the eyes and the muzzle, on the protuberances under the lower jaw, inside of the thighs, back of the shoulder, and at the root of the tail, as well as at the end of it, a rich golden color; and if there is any white hair on the top of the shoulders, over the loins, or on the connecting skin between the leg and the body, it may readily be seen by lifting the hair. With all this mellowness and color can readily be perceived the cause of it, upon handling the animal, viz: The rich unctuous fat exuding through the pores, which will make the hands feel greasy, or as if they had been handling soap. The skin of the udder will be found soft and thin, much like the feeling of a fine kid glove; it will not be drawn tight over the contents of the udder, but be loose and wrinkled, indicating a capability of stretching with the increased contents of the udder when full. Beware of a cow with a white, thick, unpliant skin, with coarse, harsh hair, particularly on the back of the udder. Such white skins are usually free of any rich dandruff. If the milk is plenty it will be thin, blue, serous.

The Hair.

2. The hair. As a rule, the hair should be soft and fine. Guenon's rule is, the hair must be short, soft, silky, or furry. The same unctuousness that mellows the hide will soften the hair, for the follicles will be filled with fatty particles and be absorbed by the hair, which will soften it. Generally, where this is the case, there will be but little hair upon the udder and that very short. The best butter cows will have very short, thin hair. Those cows that have long, harsh, wiry hair will usually have plenty of it—much upon the top of the shoulders and frequently upon the udder. Upon the latter, if the hair is plenty and particularly if upon the upper part or on the perineum, the hairs are long, harsh and staring at you, the milk, even if plentiful, will be serous and devoid of color or butter, and often the cow will dry off much sooner than profitable and not be a very sure breeder.

The Conformation.

3. The conformation. The shape of a good cow should be such as to show that she is made for the work she is to perform; she should have a motherly, a female appearance, as distinctly marked from any masculine tendency. She should be as strongly marked in her different shape from that of the bull, as a woman is from a man. In the male we look for a good, strong, broad head, firmly set by a thick, stout neck, upon a good pair of shoulders, with short, firm, but waxy horns and a bright, lively eye, easily fired up when called upon to do his duty. With the female we should look for a small, neat head, set upon a rather thin, pretty neck, upon fairly rounded shoulders, with nice, thin, rather crumpled horns, preferably pointed inwards and downwards, waxy and golden, with a tendency to a dishing of the face, and with a mild but bright eye, and a muzzle indicating good breathing powers. The chest, in either sex, should indicate the possession of good respiratory organs. The barrel of the cow should be large and deep, the ribs standing or hanging from the chine in the shape of a horse collar; this will, in a heavy milker, generally make the ridge bone rather prominent and sharp, than broad; sometimes the chine is double, which is always a good sign; if, about the center of the back-bone, there are three depressions in which you can lay your three fingers, this is an additional merit; all these signs indicate a loosely made cow, so that she is ready fitted to do her work. The back should be straight and so running out to the root of the tail, which will allow the tail to hang squarely down and free from the body; the tail bones, with its cartilaginous attachment, should extend down to at least the point of the hock, and as much below it as possible, adorned with a neat

curly switch. The loins should be broad, and the haunch and pelvic bones wide apart, and from the haunch, or hip bones, to the end of the pelvic bones a liberal distance; with all these points right, the delivery of the calf will be easy and they indicate not only the capability, but the likelihood of large calves. Short, neat, trim legs are important, because with short legs we generally find large, deep barrel, which has less "daylight" under it, indicating good digestive organs, a good feeder and a capacity for carrying a large, healthy calf.

Then, with a cow having all the good points, we may naturally expect to see double, large, prominent, knotty and zigzag veins—commonly called milk-veins—leading to a large, capacious udder, capable of holding the great quantity of milk which such an animal is likely to make.

The udder should be as nearly level at the under side as possible, and stretching forward nearly level with the belly, not "cut away" in the forward quarters, nor hanging down unevenly in the hinder quarters. If the thighs are wide apart, they will allow the expansion of the udder behind, so that the wrinkles of the skin, when the cow is milked out clean, may again expand when the udder is full and flush with milk. The udder should not be fleshy, nor the outer skin thick, nor covered with long or coarse hair; in a first-class udder we expect it to collapse to "a rag" when milked out. The teats should be of medium size, not too large to be ungainly or more than filling the hand, nor too small, to be easily handled, even by a large hand. Evenly placed on the udder and not "strutting" too much. Such points as we have mentioned above are what Guenon would look for when judging of the cow's conformation.

The Age.

4. The age. Guenon and all good judges of cattle would take into consideration the age of cows. As a heifer, with her first calf, she cannot be expected to give as much milk or make as much butter as with her second calf; nor with her second as much as with her third calf. Heifers should not be allowed to calve before they are two years old, nor, better, before they are two and one-half years of age. They may be considered to be in their prime from five until eight years of age.

The age of cows is judged by the teeth, the horns and by the general appearance. In the upper jaw cattle have no incisors; in the lower jaw they have eight. At birth the calf generally has four incisors. On the seventh or ninth day it loses the umbilicus. At three months the other four incisors appear, two on each side of the first four. Towards the end of the first year the two middle milk-incisors fall out, and are replaced in about a fortnight by two others. Towards the end of the second year the next two fall out; towards the end of the third year those

next to the former, and towards the end of the fourth year the last two. All these teeth are replaced by new ones, which are easily distinguished from the original teeth by their size and lustre. However, the teeth of cattle, especially when brought up in a stable, do not change as regularly as those of horses or sheep. At five years the second teeth commence to alter in the same order in which they had appeared, although not with perfect regularity. The older the cattle the more elongated, duller, darker and looser do their teeth become; at the age of sixteen or eighteen the teeth have generally fallen out. At this period the age can be determined with more or less certainty by the horns.

Until the end of the third year the horns are smooth; from this period a ring elevation forms around them near the head, and a new ring forms after this period with every year. A smooth horn counts for two years, one ring for three years and to every ring one additional year is reckoned. According to this calculation an animal with seven rings is nine years old. In the ox these rings are less distinct than in the cow. This may, perhaps, be partly owing to her gestating; for, during the year that a cow is without calf, no ring forms on her horns, or, if a ring forms, it is scarcely perceptible. In such a case the interval between the two rings is twice as large as usual, and counts for two years. If the rings should not be very distinct, we may judge of the age of the animals by the condition of the horns themselves, which become thinner towards their roots in proportion as the animals approach their full growth. Horned cattle may attain to the age of twenty years without, however, remaining equally useful.

Period of Gestation.

5. The period of gestation. Nine months is the general period for this process of nature, though it is usually exceeded by one or two weeks, two hundred and eighty days being the ascertained average. The cow in her wild or natural state would most probably conceive again three weeks after dropping her calf, and as nature demands that all the resources of the cow's being shall be devoted to developing the new foetus, and the milk undergoes a slight change for that purpose, she would nourish her calf for about eight weeks and partially for two months longer, and the milk would soon thereafter dry up, in order that she should not be carrying on two processes at once. But civilization has effected great changes in her nature, and we force her to develop both operations at one time, viz: her milking and breeding duties. To do this we are obliged to be regular in the milking and feeding and feeding heavier and more constantly than she would be able to do in an untamed state. This stimulation perverts her nature and develops the

lacteal glands and the udder to hold the increased quantity of milk to an enormous extent. Therefore we find many cows, and all, more or less, very much more developed than they would be in a state of nature.

Now this process of cessation of milk in order to develop the new foetus is certain and continuous, and the milk diminishes more or less from the impregnation. With some the lacteal glands have become so developed that the animal never entirely ceases to give milk between one calf and another. However desirable this may be for the milkman, it is an unnatural and forced condition for the animal, and, if possible, she should be "dried off" at least from four to six weeks before calving, to give her needed rest. Such cows will occasionally have a year when the owner will say she is not doing as well as usual, and this is some transient trouble or disease, or natural endeavoring to recuperate. Other cows again, most generally those of robust nature and coarser make, will commence almost at once to fall off in their quantity and devote their energies to the development of the foetus instead. These animals Guenon denominated "bastard," a term as we generally understand it, not exactly applicable, but as it also means "spurious," "false," we will understand it in that sense. Of course this character of cow, failing so rapidly in her yield, is less valuable than one that brings forth her healthy young and yet gives plenty of milk in the meanwhile. This is one of the great values of the Guenon system, that it enables one to perceive, select and discard cows of a spurious character. By the coarse, masculine form, by the harsh, wiry hair, by the dry and dandruffless skin and, above all, by the escutcheon, Guenon points out how to avoid purchasing such stock. So that of the two buyers, he who has mastered the system will buy the less handsome but more valuable cow, while the ignoramus will buy the more beautiful and more worthless stock at a higher price.

Thus it will be seen the importance of the judge knowing how far in gestation the animal has progressed, in stating the quantity the cow will yield and the length of time the animal will continue to milk. The size and shape of the escutcheon will tell both, but the yield is modified by circumstances and by the other points.

Health of the Animals.

6. The health of the cow was made another point in judging by Guenon. If the cow is viewed as a machine, it is evident that it will run more perfectly if all its parts are in good condition and supple from being well oiled, than it would if choked up with dirt or accumulations. A cow in best health is evidenced by a clear eye, a healthy skin, a fine coat of hair, a good quick step and an excellent appetite. Whether she is breeding

or milking, her health will have an important influence upon both. Her milk will be rich and not serous, or blue and watery. If Doctor Sturtevant's theory is true, that the coloring of the milk is derived from the daily throwing off certain glandular cells, a healthy cow performing its functions well will throw off larger cells and containing more fatty matter and thus enrich the milk more than an unhealthy animal. This is evidenced not only by the different amounts of butter yielded from different animals, but by the varied flavor of milk. To those who can appreciate good milk, the flavor and body of some milk is far superior to that of others; and this, too, independent of the varied quality of the several breeds. The *fœtus*, too, will grow larger and make a finer and healthier calf than from an unhealthy animal.

It is evident, therefore, the health of the animal should be taken into consideration, especially in estimating the quality as well as the quantity of the yield.

The Food.

7. The feed. To maintain a cow in good health and to get from her the greatest returns for profit, it is evident she must be well fed and intelligently fed. To be well fed she must have sufficient to satisfy her appetite and to fulfill the demands made upon her. In the majority of cases the feeder as he passes along the different stalls will give to each cow about the same quantity of food, never considering that there are gross feeders as well as delicate feeders among animals as there are among men. That some are stronger, larger and healthier than others. That some yield much more than others. There are always certain cows that take better care of themselves than they do of their masters. In other words, these cows will give less milk and keep themselves in better condition than other cows. Now, if a cow is constitutionally right and can digest thirty pounds of hay with six quarts of meal a day, and yield a proportionate amount of milk and butter, she may pay a great deal better profit than one that eats less and pays less. The good worker and eater should have more than the poorer worker; they should not be treated alike.

To feed intelligently requires this discrimination, which may be made by ascertaining the yields of every cow in the herd, and testing each one by various amounts of food. Also, by studying by practice and from the analyses of experts, the different values of various foods and the proper combinations of the several kinds of foods. The scientists of the German experiment stations have proved that up to a certain point special foods may be given to produce certain results, but beyond that point it would not be profitable to increase that food. This proves that the system may take and assimilate and convert

food to a profit in changing it into a marketable product, but that after a certain stage the extra amount of food is no longer assimilated and profitably converted. These results may be proved for himself by any farmer. His first step would be to study the values of different foods. He will find one will make more muscle, another one more fat, another one more milk, and so on. He will find, too, the different combinations and proportions to feed them in to be the most valuable to him.

Now, Guenon knew he might go into one herd and after examining one of the cows and ascertaining how it was fed, and hearing the results and comparing this with his own knowledge of what such a cow should do, could the more safely base his calculations of what all the other cows of that herd would do.

The Breed.

8. The breed. Guenon, by a long course of attention to the yields of different breeds, knew that one breed on an average would give more milk than another breed, while those of another breed might give less milk but more butter; also, he had learned the indications as to quality. Thus he could safely judge the quantity of milk and the quality of it, or in other words the quantity of butter such milk would make. Thus it was important he should judge by the breed as one of his points.

The Size.

9. The size. Each pure-bred animal must, to a certain extent, conform to the average size of that breed, but there are three weights that we may and he did divide them into; they are the large, of five hundred and fifty to six hundred and fifty pounds, *dressed weight*; the medium, of three hundred and twenty-five to four hundred and fifty pounds, and the small, one hundred and ten to two hundred and twenty-five pounds. If the cow is viewed as a machine we must expect no more from her than we would from machines. A small engine is rated as a two-horse power; a medium size, say, at four-horse power, and a large one at six-horse power, or to make the comparison from ourselves, we do not all eat alike; a small, moderate eating man we do not expect to do as much work in lifting, pulling, or other heavy work as a larger, more powerful man consuming much more. Thus, applying the same facts to cows, we may reasonably expect the same results from them, for the laws of nature are the same through every branch of the animal kingdom. Therefore, in judging cows the size of the animal must influence our estimate of them, not only in one breed from another, as the Jersey from the Friesian, but in specimens of the same breed, for the breed and the size will always modify the quantity to raise or to lower it. The large may give twenty-

four quarts, the medium nineteen quarts, the small fourteen quarts, though all may have the same character of escutcheon.

The Escutcheon.

10. The escutcheon. I have named this last while most people would name it as the first and only point of Guenon's system, because he was the first to classify and give significance to the various shapes in which it shows itself.

I hold that it would be very unsafe and certainly very unfair to Guenon, to judge animals only by that one of his ten points. For all the other points I have explained he thought, and I think, very necessary to form an infallible opinion of the animal. But with the other points in conjunction a knowledge of the escutcheon is invaluable. It is the best outward indication of the inward merits of the animal. Not because the shape of it is different on one animal from that on another, not because it is a cause, but that it is an effect of cause and where you find the cause you will find the effect. Thus, I have never seen a cow with a first-class escutcheon that was a poor cow, nor have I ever seen a cow with a poor escutcheon that was a good one, especially when it was unaccompanied by a majority of the other points always found with a good escutcheon. You may then ask what object is gained by learning about the escutcheons if the other points show the animal's true character; and I may ask why eat a full meal instead of a partial one? Your judgment may be wrong as to whether it will last you until you get another one; or if impecunious, you were offered a hatful of gold and you took out two or three coins instead of a handful, would it be wise?

I have generally found they who denounced Guenon's system had not studied it, and in many cases they could not even tell the names of the different escutcheons and certainly did not know Guenon judged by ten points instead of one.

Guenon's Classification.

In the last revised edition of Guenon's book he revised the whole system, simplifying and improving it. He classifies the various shapes of the escutcheons into TEN CLASSES. Each one of these ten classes has SIX ORDERS. Each class represents a gradual reduction in the quantity given, and each order represents a gradual reduction in the time; so that a cow of the *first class* and *first order* will represent a very much larger escutcheon of the *Flanders* shape, and a larger number of quarts and a longer time for milking than the *first class* and *sixth order*. And the first class, first order, will give twenty quarts and milk nine months; while the cow of tenth class and sixth order will only give three quarts and milk three months. The one is most valuable, while the other is utterly worthless. If

the system enables the purchaser to pick out the one and to discard the other, it will need no one to praise it to him.

Guenon thus made the *perfect* shape the representative escutcheon of its class; and just so much as it varies from that and gets smaller, just so fast does it descend in the *orders* of that *class*. Suppose the *first order* of every class should represent one hundred, then the next size smaller in that class may be represented by ninety, the next by eighty, and the fourth order by sixty; for they drop much faster, in proportion as they descend in the class to the sixth order.

Now, as a general rule, it is safest not to buy a cow below the fourth order of any class, and, of most of them, unsafe below the third order.

The ten classes and six orders are represented by sixty escutcheons, and to each class there is a bastard escutcheon, making ten more, or seventy, to which we may add ten classes of bulls of three orders each, or thirty, making in all a hundred varieties of escutcheons to learn. But omitting the orders below the third, as they are not necessary to be learned, reduces them by thirty; and as the bastards are exactly the same, with only two varieties of bastard-marks, we need learn but two, so that cuts off eight more; then, as the bulls are marked the same as the cows, we cut off thirty more; so that the hundred is reduced to only thirty-two that it is necessary to be well acquainted with.

These we simplify again by calling your attention to the fact that the thigh-escutcheons are all very much alike; therefore, when you have learned one you have learned all, the only difference being the reduced size and some imperfections. It is the *vertical* portion that decides the class in which the cow is to be ranked; therefore you will become familiar with the ten vertical portions of the escutcheons. With this point gained and the judgment properly exercised to tell to which order of the class you have decided the cow belongs, and a proper sense of handling the skin and hair, you see the system is very simple and soon acquired. Our hand-book, with its hundred illustrations, gives the number of quarts each class and order give and the time the cow will milk, and with a little practice with it in the barnyard, and knowing what his cows will do, any intelligent farmer will soon become *au fait* in the system.

The Escutcheon.

We have now the outline of Guenon's system; let us examine more in detail into the variety of escutcheons. The drawings given represent the *first order* of the ten *classes*, with the quantity given by each class and the length of time they will milk. The *quality*, of course, is indicated by each animal. One hour in the barn-yard is worth hours of description; and

at each lecture I endeavor to have the opportunity afforded to show practically on the animals the different escutcheons, and how to learn the art of handling.

The escutcheon is that surface of the udder, the perinæum and the thighs, where the hair grows upward. On all the remainder of the animal the hair grows downward. Escutcheons extend according to their class, from the center of the four teats to the level of the upper extremity of the vulva, and may extend in breadth from the middle of the hinder surface of one leg to the middle of the hinder surface of the other. By their form or configuration, escutcheons characterize and distinguish the ten families which together constitute Guenon's classification.

Each of the *classes*, or families, is of fixed form, always similar to itself, but variable in the dimensions of its surface, and is estimated by the limits of the escutcheon. The extreme limits are the hams, the udder and vulva. It is the variation of the extent of this surface which divides each class, or family, into six *orders*. The escutcheon of the first order is the most developed, and is also the best marked; that of each of the lower orders is similar in form to the first order, but is in reduced proportion, or with the dimensions reduced, or brought into less extended limits, reaching no longer the hams, nor covering the interior of the thigh, nor yet reaching up to the vulva. In any case, the broader it extends upon the thighs, the lower down and higher up the broad part covers, and the higher up and the broader the vertical portions are; and the more perfect and equal, or uniform in shape of its class it is, the better is the escutcheon.

The lower half, or broad portion of the escutcheon, is of nearly similar shape in all the classes; only, in the lower classes it is not quite so broad, nor quite so high up, as on the better classes; while the vertical portions gradually diminish both in height and breadth, until, in the tenth class, there is none at all. We, therefore, in speaking of the escutcheon, divide it into two parts. The lower portion, or broad part, running on to the thighs, we call the thigh-escutcheon, the upper portion, which extends up to the vulva, or towards it, we call the vertical portion. The thigh escutcheon in all the classes resembles a round-pointed shovel, while the vertical portion may be likened to the handle. Now, remembering this fact, that the vertical or upper portions are what mostly distinguish the different escutcheons, will show that most attention is to be paid to the vertical part; also, it is about the upper part the blemishes usually appear which detract from the value of the escutcheon.

The lower part, or thigh-escutcheon, indicates the quantity of milk the cow will give; the upper portion, or vertical escutcheon, the time she will milk; and the color of the skin, the

feel of it and the character of the hair on the escutcheon, will tell the quality of the milk. And these three points must be judged partly, also, by two other matters,—the size and the breed of the cow. The nearer any cow comes, in hair and mellowness of hide, to the characteristics of a first-class Jersey cow, the nearer she comes to first quality for richness of milk and for butter.

The effect produced by the change in the direction of the growing of the hair, which forms the escutcheon, is not glaring on the animal. It is merely a difference of lustre and the gloss on the surface of the escutcheon, from the part of the skin surrounding it. The hair of the escutcheon is finer, shorter, more furry and more silky. Its appearance at first glance makes one think this part of the animal has been shaved, and is perhaps quicker seen than the hair on the rest of the animal. It is more easily seen in summer when the hair is shorter, and usually the animal is cleaner, and the hair more glossy from the nature of its feed; also, it is to be seen better when the animal is near her period of calving, or just after it, as the udder, the veins, &c., are more distended. The drawings of Guenon represent the escutcheon as it would be seen if the skin of the udder and escutcheon was stretched upon a board, and it often times can be seen much better and more truly if the thighs are stretched apart, and the skin distended by the hands. If in winter there is any difficulty in seeing the outlines of the escutcheon clearly, by drawing the back of the hand down it, with the nails downward, they will rub against the up-growing hair, and it will thus be easily defined. Also, if the cow advances a few steps slowly, it will show the different parts more surely.

The escutcheon also indicates, in all animals whose escutcheons are of the first order, that are in good health and to which no accidents have happened, as plainly its generative ability as its production of milk. It is therefore highly important the bull should have a good escutcheon as well as good shape, fine hair and mellow skin.

EXTERNAL POINTS AS INDICATIONS.

The views of Dr. Michener, an eminent veterinarian of Bucks county, Pennsylvania, will explain some difficulties which often arise to the learner, and also some reasons why in a few cases the signs fail. Dr. Michener shows that the outward signs are not the cause of a full or of a poor yield, but that they are the result and the indications, and that they may be prevented and altered by poor management and feeding. Then the breeder may judge of his new calf, whether it will be profitable to raise it, and if so, that his efforts in care and feeding will be repaid in its future development, the signs showing that it starts fair, with promising gifts, from nature. Also, as we have urged, that the true expert judge will always carefully examine the animal by ten points and not by only one.

MILK VEINS AND OTHER EXTERNAL POINTS IN THE COW AS INDICATIONS OF PRODUCTIVENESS.

By DR. ISAIAH MICHENER.

In order to answer the above questions so as to be understood, it is necessary that I should give a short description of the circulation to and from the mammary gland.

First. The arteries that supply the mammary gland are derived from the external pudic artery. The branch of each side upon reaching the lacteal glands divides into two principal trunks one going to each of the two quarters of that side of the gland. The larger of these arterial trunks supplies the anterior quarters.

Second. The veins that return the blood from the mammary are deep and superficial; the deep follow the arteries, while the superficial are known as the subcutaneous abdominal veins, which are commonly called "milk veins." In milch cows these latter vessels are enormous in volume; they are prolonged forward underneath the abdomen, to near the sternum, where they pass through to join the internal thoracic veins. The opening through which these veins pass are commonly called the "milk fountain" or "door."

Third. In order to more fully understand this question it is necessary to know the anatomy of the mammary glands also.

This gland is composed, first, of the external skin; second, .

under this is a yellow elastic fibrous envelope which forms partitions in the gland. The glandular tissue is made up largely of special secreting cells known as acini, or coeliac vesicles. These are clustered like grapes on a stem; the stem serving as ducts. These ducts are furnished with large dilations that serve as reservoirs and hold the milk until it is forcibly withdrawn. The acini are the true milk secreting portions of the gland. They are lined by special epithelium and it is these cells that by a series of metabolic changes produce those parts of the milk that do not exist in their own form in the blood.

Milk is in fact both a secretion and an excretion; the water and salts simply filtering through the blood vessels and membranes lining the gland vessels; while other milk constituents, such as fat, casein, milk, sugar, etc., are the product of certain changes already referred to, occurring in the cells composing the gland.

The above description of the anatomy and physiology of the mammary gland together with the circulation thereto, gives a pretty good idea of how milk is secreted, and if that be correct then large milk veins have no effect in the production of milk or butter; nor does any of the other external signs, such as a first class escutcheon, a slim tail, broad hips, level back, slim neck, fine, tapering yellow horns, broad forehead, bold, prominent eyes, etc. To say that any of these appearances have any thing to do with the vital processes that are working silently and unseen for the production of milk and butter is to my mind ridiculous.

Now let us look at it, think of it. What has a slim tail to do with the secretion of milk? What has broad hip bones to do with the circulation of the blood from which milk is derived? Suppose you cut her tail off, knock her hips in, put out an eye, bend her back down, break a horn off, or dissect out the skin containing the escutcheon, turn it upside down, stitch it in place again, and I have no doubt, as soon as the cow recovers from the abnormal condition that her system would be thrown into by the surgical operation, that the vital processes of secreting milk and butter will be resumed and performed as well as they were with all these signs unbroken, and the escutcheon right end up.

Now after having shown that these external appearances, marks, etc., have nothing to do with the secretion of milk or butter I will return to my text.

Are there any external appearances by which a good cow can be known? I answer, yes. Nature always puts her stamp upon her production according to their quality and intrinsic worth, as gold, silver, copper, zinc, lead and iron, all of which are stamped with a fineness and luster in proportion to their

value; and so we find it in the vegetable kingdom, and also in the animal.

A first class cow then will be stamped with a first-class escutcheon, large milk veins, yellow, fine, soft velvet skin, broad hips, etc., etc., that I have mentioned above, and they bear the same relation to a good cow that the stamp put upon a bag of fertilizer does to the contents of the bag; the stamp does not have anything to do with making the fertilizer rich in ammonia, in potash or in phosphoric acid, but it gives the per cent. of valuable ingredients that the bag contains. Precisely so it is with the stamps that nature has put upon the cow; they tell the per cent. of her value with unerring certainty, provided she has been bred, raised and educated according to the laws of physiology and hygiene.

In order to show how nature's works may be spoiled or turned out of its legitimate channel so that an expert in judging by these external signs may be led into error, I will suppose a calf to be born with a first-class escutcheon, with all the other essentials already enumerated that belong to a good cow; let such a calf be raised on food deficient in quantity and in quality, just enough to sustain life, it will not be developed; those latent good qualities that nature planted in it will forever remain dormant, and such a one being examined by an expert, most likely would be pronounced a first-rate cow, whilst the facts are that she is of very little value as a milch cow.

On the other hand a calf born with all these stamps of superior excellence upon it, may be fed with such rich highly carbonized food that keeps the fat secreting vessels constantly stimulated to an abnormal degree until those vessels become greatly enlarged the same as a channel cut in the ground by running water every shower cuts in deeper and wider until it takes all the water that falls from quite a distance around it. Many Durham cattle have been raised on this high pressure system and kept fat from the time they are dropped up to maturity, the effect of which is to nearly obliterate the lacteal vessels. Such a cow may possess a first-class escutcheon, be beautifully formed, all but the udder, which will be about as large as a quart mug and contain a pint of milk. This state of things argues nothing against the escutcheon theory, but shows conclusively the ignorance of him who raised the cow and perverted her from what would have made her a first-rate milch cow to one of no particular utility except for the butcher.

The mistakes in educating the cow may be so great as to neutralize the best qualities that she was originally born with. If she is not thoroughly milked she will soon acquire the habit of retaining a portion of the milk, which will cause her to go dry much sooner than she otherwise would. If you cease to milk a cow with her first calf, three or four months before

coming in again, that habit will soon be established, and it will be found difficult to break it up.

This is another instance in which nature is belied, and the stamp of her quality ignored because of the ignorance, or carelessness, of those who train her. In a case like this the expert examiner that depends upon the development of the escutcheon alone will be led astray.

Farmers have, by becoming somewhat acquainted with the laws of physiology, of digestion, of dietetics, in connection with the laws of breeding, made great improvements in all our domestic animals. The cow has been brought up from ten pounds of milk per day all the way along to eighty pounds or more. In butter from three pounds per week up to ten, fifteen, twenty, and it is said as high as twenty-seven pounds have been made from a cow in seven days.

So it is with the trotting horse; by judicious breeding and feeding to develop muscular strength, and skill in training, we have the speed of horses reduced from four minutes to the mile down to 2.10 and a fraction, and there will still be a reduction of that tremendous rate of speed. Now the man whose knowledge and skill has brought out or developed the latent powers and useful qualities of those animals should be considered a public benefactor, because these improvements have added vastly to the agricultural wealth of the country. Most surely the farmer that raises a cow from the ordinary value of forty dollars up into the thousands is a public benefactor.

THE MILK VEINS OF THE COW.

The milk veins of the cow are erroneously so called, we presume, from their appearance in size being generally a faithful indication of the amount of milk likely to be yielded by the animal. It may perhaps then be of use to examine into the value in the shape, the size, and the general characteristics of the so-called milk-veins.

Milk and its various products will, on an average, show the following percentages of water, fat, etc.

	Water.	Fat.	Casein.	Albumen	Milk sugar.	Ash.
Whole milk, .	87.60	3.98	3.02	0.40	4.30	0.70
Crean, . . .	77.30	15.45	3.20	0.20	3.15	0.70
Skim milk, . .	90.34	1.00	2.87	0.45	4.63	0.71
Butter, . . .	14.89	82.02	1.97	0.28	0.28	0.56
Buttermilk, .	91.00	0.80	3.50	0.20	3.80	0.70
Curd,	59.30	6.43	24.22	3.53	5.01	1.51
Whey,	94.00	0.35	0.40	0.40	4.55	0.60

It will thus be seen that the principal component of every product of milk, except butter, is water.

Technically speaking, milk is the fluid secreted by the mammary glands of the mammalian division of the vertebrate animals. These mammary glands may look to be of the same size in two cows of the same breed, and of the same size and weight, but they may vary much in their capacity on account of the diversity of the tissues of which they are composed. It is this variation which leads us to avoid the fleshy bag, though it may be larger and handsomer, and to choose the one that is devoid of this spongy tissue, but will milk clean out, leaving the udder as soft as a rag.

The udder is a sack containing the mammary glands. There are four or six mammae, two or three on each side; but as almost always but four of these secrete milk, we call them the quarters of the udder. The quarters are enveloped by a common fibrous and elastic tunic, which is connected with that of the abdomen. This envelope is adherent to the skin and connected with many prolongations intersecting the gland. The opening through the teat, or the milk duct, is the stem connecting with the reservoir, from which ramify many branches connected with clusters of gland vesicles; these tubes or ducts all converge towards the milk reservoir.

The skin of the udder should be thin, flexible and covered with a fine silky down.

Each teat drains its special reservoir into which the glands empty their secretions. Each of the four reservoirs are closely connected, though entirely distinct from the other, being separated by thin but impervious membranes. Therefore, to milk the cow clean, each teat must be thoroughly emptied. Each teat, when in the normal condition, should yield as much as each of the other teats. They should be regular in form, and stand from three to four inches apart.

Each quarter of the cow's udder is supplied by separate arteries with blood. These ramify by numerous veins, which are very prominent on the best cows, and are one of the best signs of a good milking cow, in connection with the veins on the perineum. These veins have no uniform direction, being irregular or zigzag, and should be large and varicose or knotted. The larger they are and the more varicose, as a result of the quantity of blood attracted by the activity of the milk glands, is not only the indication of the ability to produce milk, but is a measure of this activity; so much so indeed, that if they are larger on one side than on the other, the quarters will be found to yield different amounts.

The veins on the perineum form a net-work under the skin; their position is often plainly indicated by a knotted line, but in many cases they are more plainly perceived by pressing

upon the skin at the base of the perineum, or forcing the blood back toward the vulva, when the undulations or knots can be perceived or felt. They are larger and more easily seen when the cow is at or beyond her prime than in very young cows, because the glands have reached their full development. The udder veins discharge their blood in great part into the thigh vein, and also in the abdominal vein, consequently where the one is largely developed the others are likely to be also.

As the food forms the blood, so also does the blood produce milk, like all other animal products. Milk and blood are like and yet unlike; they have nearly the same composition; they contain all the nutrition that is necessary to support and develop animal life; and their component parts are so similar in the general proportion of their nutrition with flesh, that all three may be said to vary only in their different forms. Thus the milk cure and the blood cure are only other ways of feeding the stimulating and supporting virtue of flesh. Yet milk has more water, caseine and sugar than blood; while blood has more mineral matter and fibrine.

If the blood is thin and poor, and has taken up but little of the rich elements of the food, so will the milk be poor and watery. The proper object of rich feeding is that the food may be properly assimilated, and furnish fat for enriching the blood and maintaining the animal economy in a healthy proportion of fat and tallow in the body. Where the digestion is perfect and this double duty is performed, the blood will be rich, the body will be in fine condition, and the milk will be rich in fats. Mary Anne of St. Lambert's is a brilliant specimen of this perfect condition. With her the adipose tissue, or the organs for the deposition of fat, are not stimulated to so great degree as to interfere with or rob the mammary glands, the organs for the secretion of milk. These two important functions or abilities, the forming of fat and flesh, and the secretion of milk of good body, and at the same time nourishing and developing a foetus, are the signs of robust health and proper digestion. These are aided by a proper degree of warmth, light and pure oxygen, derived in stables from pure ventilation.

With these main objects for proper working, every part of the system is well developed, and the system works surely but noiselessly, as much so as an Otto silent gas engine. The action of the heat permeates every part of the system, and the veins and arteries carry the blood to every part. A strong, healthy cow carrying on the maintaining of its own body, the nutrition of the foetus, and giving from twenty to one hundred pounds of milk per day, has a large daily work to do. The rapidity with which a large amount of blood is carried to and from the udder, requires a capacious channel to conduct it. Thus the abdominal veins which carry back the blood need to be largest

for the cow doing the largest amount of work; and if the holes where these veins enter the body are proportionately large no check is created. These veins, though natural and necessary, may be artificially enlarged; that is to say, though the act of suckling is natural, and the secretion of milk for the purpose is part of the purpose of all mammalia, yet its increase beyond the necessities of nature is artificial, and is the result of care, of breeding and of feeding, until that type is fixed. This supply of milk depends for quantity upon the supply of blood, which passes into the mammary glands, and their state of activity, while its quality is derived from the internal structure of the animal. The Jersey and Guernsey cattle are the best types of the improved stock for the quality of the milk, and in contrast to the cow in a wild state. For hundreds of years they have been carefully handled, led short distances to pasture, and fed upon very rich succulent food, and consequently having no need for muscular tissues like wild cattle, they tend rather to the production of fat and rich milk, and like all animals having a tendency to secrete fat, they do not usually secrete large quantities of milk. As the care of the channel islanders increased with their own advancement in the amenities of life, so have their cattle changed in their appearance and their abilities; and the cattle of to-day are of a different type than in former times for yield and for beauty. Indeed their change in appearance is remembered by many of us, while the change in yields is easily seen in the records of the last ten years. The result of the improved breeding and the principle of selection, will materially increase the size, and as well, the ramifications of the milk veins.

That these milk veins are considered important, is evidenced by the scales of points of the different breeds. In the Dutch-Friesian they count for twelve, and were formerly five, the same on bulls; in the Guernsey herdbook they count five points, the same as for a good udder, and in the American Guernsey herdbook for six points; in the American Jersey herd register they count for five points.

EXTRACTS FROM THE MUCH LARGER NOTICES OF THE WORK.

HOW TO SELECT COWS; OR, THE GUENON SYSTEM EXPLAINED. By *Willis P. Hazard*. In no way is the march of improvement in agriculture more decided than in the new discoveries and new methods of developing its resources. It is owing to these that America is now the granary of the world, and, as years roll by, if the developments of the next decade are as great in proportion as the last one, no matter how extensive the foreign demand, there will be an ample supply at still lower prices than at the present. No branch of agricultural interests has changed so much and received such an impetus, especially within the last five years, as the dairy. Entire new modes of making butter and cheese and of setting milk have largely taken place of the old ones. Competition in making dairy products becomes keener each year, and every process by which the labor can be lessened, or the products be cheapened, meets with recompense.

The first step, however, is in the selection of good stock, for by it the product of the herd is increased from twenty-five to thirty-three per cent., and, therefore, the profits must be immensely greater. The old plan of our forefathers of judging of the value of a cow by a crumpled horn and a large bag is now set aside by recent discoveries. The most important and most reliable one is that of Mons. Francois Guenon, of Libourne, France. After a series of experiments he was convinced there were outward marks in the hair which were an indication of the yield and quality of all cows. Patiently for many years he labored at forming his discoveries into a system, with classes and orders of each variation. He was finally rewarded by the approval of all the leading agricultural societies in France, and by that government with a pension of three thousand francs.

The work of Guenon was partially translated and published in this country years ago, but it was his first crude effort, and it presented the new science in so crude a form as rather to dismay the learner than to invite him to master it. Last year the State of Pennsylvania appointed a commission of three well-known agriculturists and experts to test the system and report upon it. That report was printed and published to the extent of twenty-five thousand copies, which but partially supplied the demand. Messrs. Blight, Harvey and Hazard examined the escutcheons of two hundred cows, and interpreted them as regards the quantity, quality, and time of the yield of each animal. Alongside of their statements the knowledge of the owner of each cow was printed, and it is truly wonderful how accurately the character of each cow is given by these gentlemen who had never seen the cattle before. The gist of their report was that the system was invaluable and worthy of adoption by every farmer, and such adoption would add millions of value to the improved herds of the country.

Mr. Hazard in his book gives a sketch of the life of M. Guenon and the progress of his system, and then fully explains it, so that in this simplified form any one can quickly learn all the points so as to readily apply it. The opinions of others, both pro and con, are introduced, argued, and answered, so that in this volume one gets a full history and account of the system, and its practical application is made easy. There is a profusion of engravings, photographed from Guenon's designs, which thoroughly elucidate the text and render it a valuable handbook which no farmer can afford to do without, and which amateur agriculturists will find a most interesting development of a wonderful discovery.—*Philadelphia Inquirer*.

"At the New York State fair, in September, 1879, Mr. Hazard applied the Guenon system to a large number of cows of different breeds on exhibition, and told the amount of milk each gave, as indicated by the escutcheon theory. A committee, with Col. F. D. Curtis as chairman, was appointed to accompany him, and they state in their report that he was generally accurate, not varying in any instance more than two quarts in stating the daily average yield, and in most cases giving the amount exactly, and also the time the cows would give milk. He made his estimate on the average daily yield

for the first three months after calving, on liberal feed. In one or two instances he over-rated the cows, but generally where there was any difference he was under the amount stated by the owners. Mr. Hazard takes into consideration in his estimates the size of the cow and her whole contour, as well as the character of the skin. His round of observation is first the shape of the escutcheon, then the milk veins and quality of the skin. He offered to have the cows blanketed and then tell their milking capacity, but this was not done. It is fair to say that he judges mainly by the escutcheon. The tests attracted a large circle of breeders, who were greatly interested on account of the novelty and general accuracy."—*Col. Curtis in New York Tribune.*

NOTICES OF THE PRESS.

"The whole system is very clearly laid down, so that any one, by practice and study, may learn from this work how to use it. The arguments for and against are also set forth, with proofs of the value of the system. Our dairy-men would do well to study the subject and be able to guess as well as the members of the commission on the value of the cows examined by them."—*American Dairyman.*

"In itself, the system is very simple, and with care, easily understood; and, taking into consideration its great importance, should be studied and acquired by all who are directly or indirectly interested in farming, and as so many opportunities are offering to obtain a practical knowledge of the method, there can be no excuse for ignorance any longer. The system of judging the value of cows has become so thoroughly arranged that with a little practice, enough can be learned from it in a short time to serve any one making use of it, and thereby avoiding loss.

"The bulls are found marked with corresponding designs, as far as the sex permits, which indicate unerringly their good and poor qualities; and thus by a wise use of the knowledge acquired through the Guenon method, stock breeders can judiciously, and with almost certainty, select their cattle for the purposes in view, either for milking, butter-making, or beef, according to their desire, for all these results follows its teachings."—*State Fair Daily.*

"Mr. Hazard has given us a most interesting work upon a system that has gained the respect and consideration of thinking farmers the world over."—*Farm and Fireside, Springfield, Ohio.*

"Mr. Hazard is, no doubt, the best posted supporter of the system in this country, and may be regarded as authority. If his recommendations for the selection of dairy stock are worthless then the whole Guenon system may be condemned as being utterly fallacious. His book deserves careful attention from intelligent farmers."—*Bucks County Intelligencer.*

"In a majority of cases, the marks have been reliable, and this should incite all dairy folks to know what is said about it."—*Mechan's Gardener's Monthly.*

"It embraces a sketch of Guenon, and the progress of his discovery; extracts from his preface explaining his views; an explanation of his system of escutcheon marks; descriptions of the various escutcheons and their indications of value and quantity, and directions how to apply them in practice, together with the report of the commission of which the author served as secretary. Nearly one hundred illustrations are given, those of the escutcheons being photographed from the drawings in Guenon's last revised edition."—*Country Gentleman and Cultivator.*

"Remarkable as was M. Guenon's method, and although his discoveries were duly made known in this country, this is the first time that his methods have been compiled for practical use. By the use of this little handbook, there can be no doubt, but that farmers and stock raisers would save a vast amount of money. The explanations are simple and easily followed, the numerous illustrations serving to elucidate the text."—*Boston Evening Traveler.*

"Beginning with a little sketch of the method of the birth of the system in Guenon's mind, the author goes on in a clear and concise manner to explain

by plain language and appropriate drawings, the various so called 'milk mirrors' and their values, being properly understood as *aids* in selecting good dairy stock. The various opinions of those adverse to the 'theory' are fairly discussed, and the reports of various agricultural societies which have from time to time investigated it are given, together with the report of the Pennsylvania commission. Taken altogether, Mr. Hazard has succeeded in making a very readable, interesting and valuable book and one which, whatever may or may not be the preconceived ideas of its readers, cannot fail to interest and instruct him upon a subject which should be far better understood amongst farmers generally, than it at present is."—*New England Homestead*.

"A very valuable pamphlet. Mr. Hazard has devoted great attention and study to the subject, with a view of rendering the system popular, and we happen to know that his work is largely appreciated, especially by the farmers of New England, from the number of orders received for the book. The discovery made by Mr. Guenon, and the practical principles founded on it are invaluable, and the saving to the country by its general knowledge will be very great. The State of Pennsylvania, in 1878, appointed a commission to test the system and report on it. Mr. Hazard was a member of the commission, and has added the results of much study and research. He has been invited to lecture and present the subject at the annual meeting of the Massachusetts State Board of Agriculture, at Greenfield, and has many invitations and engagements in other places."—*Massachusetts Ploughman*.

BOOKS FOR BREEDERS.

THE BREEDERS' HANDY HERD BOOK.—Just issued in a neat foolscap 8vo. volume, well printed and bound, is a capital idea well embodied. The writer's experience has suggested to him to fill a want long unsupplied. Every breeder needs to keep a record of his stock, the pedigree of its ancestors, time of birth, date of serving, period of last calving, when due to calve, with a full description of points, color, markings, by whom bred, yield, &c.

This handy volume will give all this information about every animal in the herd in a neat, compact form, and is really more useful than the large, costly Registers. It also has a complete table for every month in the year to show the exact date that an animal is due to drop its young, its date of service being known; this table is for cows, mares, sows, ewes and goats.

This volume is handy to have on the desk for reference; to put in the pocket upon going a journey, or to fairs or to sales. He who has stock to sell will find it invaluable; and then they are made so cheap as to cut out a blank, fill it up with the pedigree and reverse the leaf and fill it up with all particulars and points, and mail it to the customer.

They are of two thicknesses: Those holding twenty-five pedigrees and blanks, 25 cents, or five for \$1.00; per dozen, \$2.25; those for fifty animals, 30 cents, or five for \$1.25; per dozen, \$2.75; in order to introduce them to breeders' use one of each will be mailed for fifty cents.

THE GUERNSEY BREEDER.—This work, while giving all the particulars of the richest of all breeds—the Guernsey—its origin, peculiarities, merits, sketches and portraits of the most noted of the breed, contains the practical experience of Guernsey breeders, in which all the topics of interest to breeders of all fine stock are fully discussed by men of experience in raising superior stock; modes of feeding, treatment of diseases, care, &c., &c. Large 8vo., many fine engravings. Edited by Willis P. Hazard. Price, 50 cents.

HOW TO SELECT COWS based upon the principles of selection of Guenon, in which his system is simplified and explained, with the report of the Guenon Commission of Pennsylvania. By Willis P. Hazard. 30th thousand. 8vo. 100 illustrations. Paper 50 cents; cloth 75 cents. *.* New edition, revised and enlarged, with condensed summary of the ten points for judging accurately.

DISEASES OF LIVE STOCK, and their most efficient remedies, by L. V. Teller, M. D., and H. B. Miller, V. S. New edition, illustrated. 8vo. cloth, \$2.50; sheep, \$3.00. *.* Highly recommended by Veterinary Surgeons, Physicians, Army Officers and used by the Veterinaries in U. S. Army.

FEEDING ANIMALS.—The science of feeding treated in a thorough and practical manner, by Prof. E. W. Stewart. 12 mo. \$2.00. *.* The only and most thorough book on the subject. It will save its cost very quickly.

THE GUERNSEY AND JERSEY COW.—Full account of their origin, treatment on the Islands, points, and best modes of rearing, breeding and feeding. By Willis P. Hazard. 10th edition, revised. 8vo., cloth, elegant, \$1.50. This summary of information by the best writers on the dairy breeds of the Channel Islands Cattle, should be in the hands of every breeder of them.

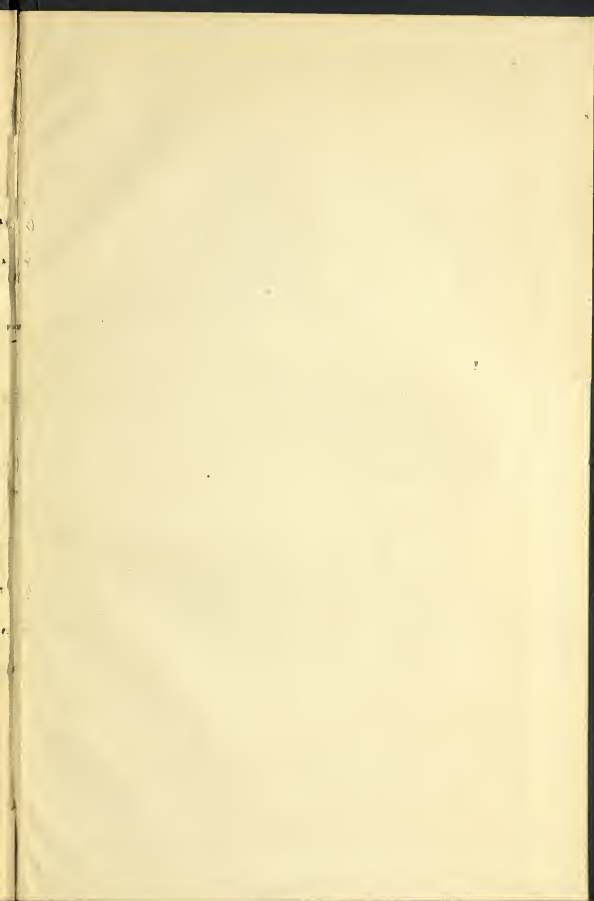
FARMER'S FRIEND AND PLANTER'S GUIDE.—A handy manual for reference. Illustrated; 12 mo. paper, 25 cents. *.* This comprehensive volume gives the full rules for the weather in 40 pages; how to select cows and horses, care of bees, live stock, poultry, flowers, fruit, and vegetable gardens; many valuable receipts for the farm, the household, the sick room.

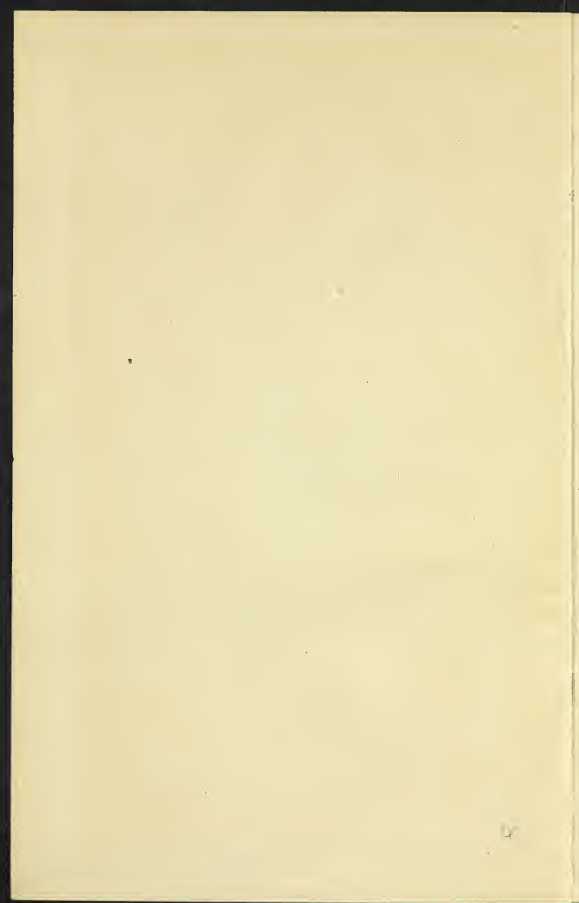
ON THE PRINCIPLES AND PRACTICE OF BREEDING, by Prof. Miles. 12mo. \$1.50. *.* The only work on the subject should be in every breeder's hands.

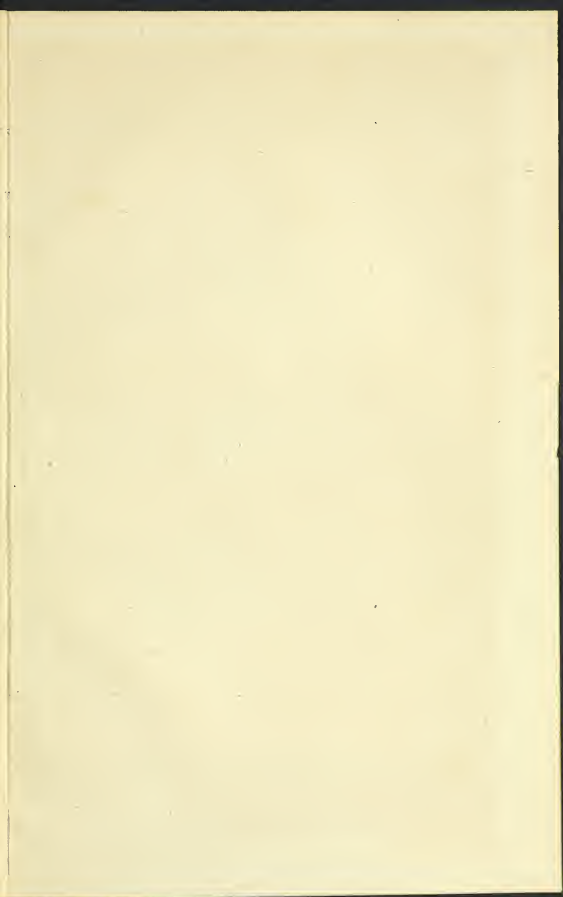
BUTTER AND BUTTER MAKING; especially of the finest kind that is sold in the Philadelphia markets. By Willis P. Hazard. 12mo. 25 cents.

Either book mailed upon receipt of price, or the complete list sent for \$8.00.

Remit to WILLIS P. HAZARD, West Chester, Pa.





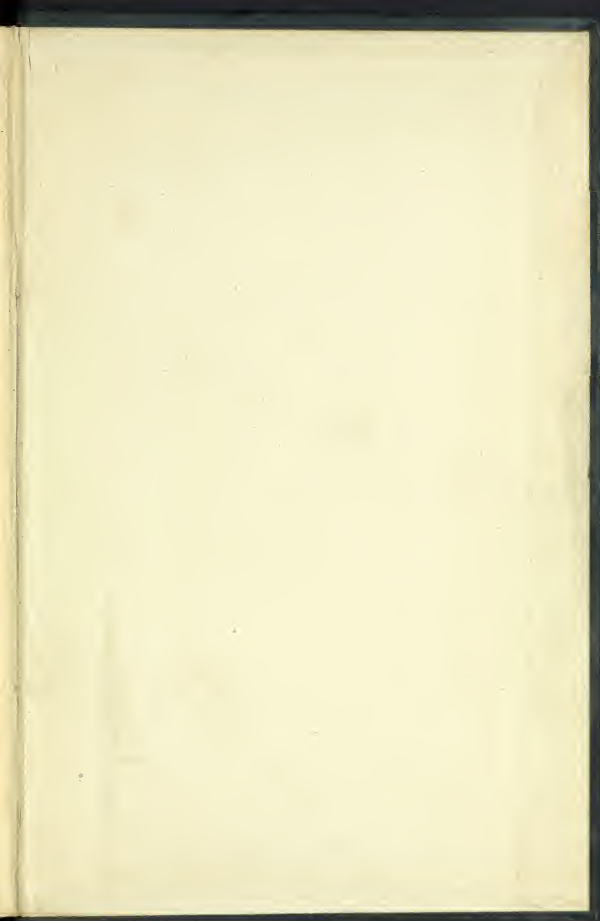


UNIVERSITY COLLEGE, SOUTHAMPTON
THE LIBRARY

*This book is to be returned to the Library on or before the
last date stamped below*

[illegible]

H 28043



1822

10

SF

230

Perkins